

# HOW WE TRAVEL



CHAMBERLAIN

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# HOW WE TRAVEL



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HOME AND WORLD SERIES

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# HOW WE TRAVEL

A GEOGRAPHICAL READER

BY

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## PREFACE

THOSE experiences only are truly educative which prepare the individual to fill his place in life in the most efficient manner. That some of the work of the school does not come up to this standard must be admitted. The reason why experiences obtained outside of the schoolroom are generally so much more effective, lasting, and valuable than many of those obtained within is that in the former case they deal with *things* rather than with *words*. Moreover, these experiences are acquired by the child because he desires them. More closely to relate school and life experiences is one of the great aims of educational workers.

As a result of long study, we have come to the realization of the truth that the opportunities and conditions presented for growth through the agency of the school will be consciously and purposely laid hold of by pupils, and the results thus obtained woven into the fabric of their character, only as these opportunities and conditions make direct appeal to them. While we can never, in a large sense, bring into the schoolroom the realities with which the great subject of geography deals, we can create in the child that which is at once the great incentive and the key to all study—interest.

That we should introduce the child to the great unseen world through his immediate world is an accepted truth. Our work, however, should be based

more largely upon contact and experience than upon locality. In other words, there are certain points of contact, phases of human activity, with which the child is vitally and consciously concerned, and by means of which he is brought into constant relationship with those about him and also with the inhabitants of the most distant parts of the earth.

There are four great centers or units about which the introductory work in geography should be focused. These are the activities connected with securing food, clothing, shelter, and travel and communication. These are fundamental everywhere. If some appreciation on the part of pupils as to why people live as they do, and of the relation of the individual to other individuals in the community and in the more distant world constitute a much-to-be-desired result of teaching, then this approach to geography is of the highest importance.

The units above mentioned, and presented in the series of books of which this is the concluding number, constitute a rational introduction to the study of geography. The work is founded upon human activities, life as it actually exists, and it therefore commands the interest of the child. The parts are bound together by the chain of cause and consequence, and the work therefore leads to mental growth. The study naturally leads to and demands much knowledge of place relations, and this is developed through map study that is meaningful to the child because the purpose is evident. The physical environment of man and its influence upon his life is also taken up in an elementary way.

It should be obvious that to present information concerning travel and communication is not the sole



purpose of this book. Through these subjects, which make such a strong appeal to children, the pupils are introduced to human life in many parts of the world.

We now recognize that geography offers one of the best fields for the development of silent reading. In the revision of this book careful attention has been given to this matter. Following each chapter there are questions the purpose of which is to test the pupils' comprehension.

JAMES FRANKLIN CHAMBERLAIN.



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## INTRODUCTION

WHEN a deer wants to get from a mountainside into the valley below, where there is rich grass to eat and a sparkling stream from which to drink, it walks or goes with graceful bounds to that place. Fishes in rivers, lakes, and oceans swim rapidly from place to place, or lazily float about among the weeds and grasses, or play at hide and seek among the rocks. Each year before the snows of winter begin to fall the robin, meadow lark, swallow, and many other birds wing their way to the Southland. In the spring they travel northward, and these journeys they repeat year after year. By walking, running, swimming, flying, or crawling, animals do all of their traveling. No matter how long their journeys may be, they must depend upon their own efforts.

Human beings travel very slowly on foot, yet for a long, long time this was man's only means of traveling. In time, however, the horse, ox, camel, and elephant were tamed and people learned to ride upon the backs of these animals. Later, men harnessed animals to vehicles of different kinds. In this way a larger number of persons could be carried at the same time.

There are now a great many different ways of traveling. Some of these are very curious and inter-

esting. In how many different ways can you travel in your city or neighborhood?

In order to secure the things necessary to supply our daily needs, people must go from place to place for these, for different parts of the world produce different things. But it is not simply to secure and exchange the necessities of life that people travel. A few persons do this for the many who stay at home. In every large city there are men and women who ride several miles each day in order to reach their places of work. We do much traveling for the purpose of visiting relatives and friends. Many journey to see different lands and peoples. Travel is very important and new comforts and conveniences are constantly being added to our means of transportation.

You are familiar with carts, wagons, carriages, automobiles, bicycles, motorcycles, street cars, and steam cars, and many of you have seen ships, balloons, and airplanes. In addition to ordinary street cars, some large cities have both elevated and underground lines of cars. This is a great advantage, because the streets are very badly crowded. The elevated trains thunder along on tracks which are about on a level with second- or third-story windows, while the underground cars run below the level of the streets.

In the colder parts of our country sleighs are used a great deal during the winter months. The farmers haul produce on them, and they are used when people go on visits or pleasure rides. Tucked in under shaggy buffalo robes, I have had many a delightful ride in a great sleigh. How the cold wind reddened our cheeks! Sometimes we covered our heads, for the snow crystals



as they struck our faces stung sharply. The snow squeaked as the iron shoes of the sleigh glided over it. We sang songs, the driver cracked his whip over the heads of the prancing horses, and the string of bells fastened to one of them added its music to the frosty air.

In some parts of the world dogs are used to haul both goods and people. In another place I shall tell you how the Eskimo drives his dog teams over the snow and ice of his arctic land. The many explorers who have long sought to reach the north pole have had to depend upon Eskimo dogs when traveling by land. The miners in Alaska make much use of dogs in transporting their provisions, and they are also used in carrying the mail.

In France and Belgium dogs are harnessed to small wagons and used in hauling various kinds of produce. In some of the cities milk is delivered by women who go from house to house with carts drawn by dogs. Sometimes one dog is used and sometimes two. Each dog has a piece of carpet on which it may lie and also a drinking bowl.

In Ireland a peculiar vehicle called the *jaunting car* is much used. It has but two wheels and is drawn by a single horse. The seats are placed over the wheels so that the passengers, two in number, ride sidewise and with their backs to one another. The baggage is placed under the seats. There is a seat in front for the driver.

In the country districts of Mexico the patient ox is in common use. Great, clumsy carts with wheels of wood are used in hauling hay, grain, and the various products of the farms.

If you will look at a map of South America, you will find Bolivia lying south of the equator. In the lofty mountains of that country an animal called the *llama* is used. The Indians of Bolivia had domesticated and used the llama long before the Spaniards first visited the country. Much of the merchandise that



Photo by Ewing Galloway

### Milk Carts in Belgium Are Often Drawn by Dogs

goes in and out of the highest parts of Bolivia is carried on the backs of the llamas. They will carry a load of about one hundred pounds each, but if the burden is increased much above this amount, the animals lie down.

The people on the island of Madeira use a vehicle which they call *carro*. This word means car, although

the vehicle is quite unlike a car. It is a sort of sledge drawn over the bare ground instead of over the snow. The runners are shod with iron and on these is a platform resting on springs. Upon the platform are two cushioned seats facing one another, while a waterproof



*Photo by Brown Bros.*

### Llamas in a South American Courtyard

top protects the passengers. This strange vehicle is slowly drawn by a pair of bullocks.

Many people in India travel by means of the *palanquin* (pāl-ān-kēn'). This is simply a wooden box about eight feet long, four feet wide, and four feet high. It is covered and has wooden shutters which the passenger can have closed or open as he will. These shutters serve to keep out the bright sunshine, and during storms

they keep out the rain. When opened they allow the breeze to enter.

Within the palanquin is a leather-covered mattress upon which the passenger sits or reclines. At one end of the vehicle there is a shelf and a drawer, and there are in addition some large pockets made of netting. In these the occupant of the palanquin may place articles that will be needed on his trip.

On the outside are iron rings, two at each end, and through these, poles are placed. Four men lift the palanquin and its passenger by means of the poles and carry him wherever he wishes to go. It is, of course, a slow method of traveling, but people in hot countries are not generally in a hurry.

In addition to the many ways of traveling on land there are various ways of traveling on the water. Rafts, canoes, sailboats, and steamships of many different kinds are used.

To-day people travel through the air as well as over land and sea. Both balloons and airplanes are used. Airplanes can travel at a very high speed and their use is steadily increasing.

We do much business with others who may be at a distance. You see this illustrated every day in your home. Your mother wants some groceries, meat, or vegetables. Instead of going to the store or market, she may step to the telephone and order what she wants. She *communicates* with the shopkeeper and so does her business in that way. If your father is a business man, he saves a great deal of time each day through the use of the telephone.

Communicating with people at a distance has come

to be very important in business and social affairs. The telephone, telegraph, cable, and mail are the chief means of sending messages. By means of a most wonderful invention, wireless messages are now transmitted over land and sea. Wireless messages are of great value in saving life at sea as well as in many other ways.

People have not always had these means of communication. There are men and women who can remember when there was no telegraph, telephone, or ocean cable. Many people do not know how to communicate their thoughts to others by means of writing.

In ancient times messages were often sent by people who traveled on foot, just as your mother might ask you to step into another room or out into the yard and carry a message to your father. Another custom, not so old, was to send messages by a man on horseback. Do you remember the story of Paul Revere? What message did he carry?

In some parts of the world people used to build bonfires on hills as a means of signaling to others. In fact, signal fires were often used by the colonists in our own country to give warning of the approach of Indians. To the tops of tall poles, called *beacon poles*, iron kettles or baskets were fastened. In these, tar or some other fuel was placed. Wooden pins called *tree nails* were driven into holes in the poles. By means of these pins a man could climb the poles and set fire to the fuel. Beacon Hill in Boston received its name on account of such a beacon pole. It was erected in 1634. Beating upon great drums was another means of calling people together.



A very interesting method of communicating is by means of mirrors. This is called the *heliograph*. Men stationed upon a mountain catch the sun's rays upon the surface of a mirror, and flash them to another station which may be many miles away. The flashes



*Photo by Brown Bros.*

### A Heliograph

Signaling with a combination of mirrors reflecting the sun.

and pauses can be read by those who understand the signals, much as a telegraph operator reads a dispatch.

Both travel and communication are very important to all of us, whether we live in the country or in the city. I am going to tell you some of the many ways in which people in different parts of the world travel. We shall



also learn something of the various means of sending messages from place to place.

Name different ways in which animals travel.

Why do animals travel? Why do people travel?

Make a list of the different ways in which people travel.

What animals help people in travel and transportation?

What is a domesticated animal?

Describe the palanquin.

Name all the different ways you can in which people communicate with each other.

## TRAVEL IN COLONIAL DAYS

ON the thirtieth day of October in the year 1753 two men, mounted on horses, rode out of the little town of Williamsburg, Virginia. One of these men was young and of noble bearing. The other was older and was dressed as were the hunters and trappers of those days. They were soon in the woods, following a trail which was to lead them west and north, over the Appalachian Mountains to Fort le Bœuf, near where Erie, Pennsylvania, now stands.

You know that Virginia and the other colonies along the Atlantic coast were settled by the English. Later the French entered the Ohio Valley and built forts there. Because of this there were rumors of trouble between the two nations, and the governor of Virginia wished to send a message to the French, asking them to leave the country.

The journey to Fort le Bœuf was a difficult and a dangerous one. Winter was coming on. There were streams to cross, mountains to climb, and forests to penetrate. Savage Indians who might at any moment attack the traveler lurked along the way. The governor wanted a messenger who was strong and brave. Besides this, he must be able to make a map of the country, sketch the forts which the French had built, and be able properly to present the message to the French commander.

After much searching for a suitable messenger, the letter was finally intrusted to the care of the younger of the two horsemen. He was but twenty-two years of age, but he was known as a brave and honest man, and he was a major in the Continental Army. This young man was George Washington, who afterwards became the first President of the United States.

Long before our travelers reached the end of their journey winter began. The snow covered the narrow trail and ice formed on the streams. The country was a wilderness with only here and there the log cabin of a settler. Because of this, Washington and his little party, which had been increased by the addition of another white man and several Indians, had to sleep on the ground beside a camp fire.

Just at sundown, forty-two days after Washington left home, the weary travelers rode up to Fort le Bœuf. They had made a journey of about five hundred miles. The French commander, St. Pierre, received Major Washington kindly, and for three days treated him with great courtesy. At the end of that time he handed him a letter from Governor Dinwiddie of Virginia. As Washington and his companions mounted their horses, the French commander said, "My best wishes go with you, Major Washington; but I fear that your horses will not be able to carry you over this rough, snow-covered country."

"If they fail us, sir, we shall then get forward on foot," was Washington's brave reply.

"Adieu! adieu! and may God preserve you."

The return trip was even harder than the outward journey had been. The snow was deep and soon the

horses were exhausted. Leaving these and the other members of his party to get home by an easier route, Washington with a single companion set out on foot. After many hardships they reached Williamsburg on January 16, 1754.

The letter which Major Washington delivered to Governor Dinwiddie said that St. Pierre could not leave Fort le Bœuf. He was acting under the orders of a superior officer in Canada. Then followed the French and Indian War, in which young Washington served his country so well, and after that came the war for independence.

Why did Washington make this long journey on foot and horseback? Because there was no other means of making it. There was no railroad over the mountains. There was not even a wagon road. People journeyed from place to place on foot, on horseback, or in canoes. Often man and wife traveled together on the same horse, the wife riding behind on a padded cushion called a *pillion*.

While it took Washington forty-two days to make his journey of five hundred miles, we can travel an equal distance now in less than one day. The fact that the message was sent as it was, shows that there was no mail service between these points.

After a time trails were changed to roads, and coaches were run from town to town. In 1766 the first coach ran regularly between New York and Philadelphia. In good weather it required two days to make the trip. Now it can be made in two hours.

The stage-coaches were clumsy-looking vehicles, and they rocked and swayed as the horses plunged into



© Ewing Galloway

**Traffic Is Heavy on Fifth Avenue, New York City**  
Observe the two-story autobuses.

great mudholes or dashed over the better parts of the roads. Often the passengers had to get out and help the driver lift the coach from some mire.

The hotels were called *taverns*. They did not have the accommodations that hotels have to-day. If they were crowded, travelers often had to sleep on the floor. Candles generally served for lights. Where there were no taverns travelers stopped at farmhouses. The people usually welcomed their guests and charged them nothing for entertainment.

George Washington did not live to see a railroad train, nor any means of travel more rapid or comfortable than those of which I have told you. Are you not glad that you are surrounded by so many conveniences?

Who was the young man whom the governor of Virginia sent to the French commander?

What kind of man was needed for the work?

Why was the journey so difficult?

How did people travel in those days?

How did the taverns differ from the hotels of to-day?



## TRAVEL IN NEW YORK CITY

WHEN the war of the Revolution broke out, the people asked the brave man who had carried the message to the French commander to take charge of the army. He served so well that when the time came to elect the first President of the United States the people once more turned to this great and good man.

Washington left his plantation on the Potomac River and traveled to New York City, which was then the capital of our country. He made the journey in a coach drawn by four horses. The roads were so muddy that in places the coach had to be lifted out of the mire.

New York was at that time a small place. The town was on the water-front at the southern end of Manhattan Island. Much of the island was covered with forest; there were few streets, and some of these were poor and crooked. What is now Broadway was a part of the road followed by the postman who carried the mail between New York and Albany. People traveled from one part of the town to another on foot, on horseback, or in vehicles drawn by horses.

As the city grew, people could no longer afford to travel in this way. It took too long to go from their homes to their places of business. The horse car was the first improvement. This, being run on rails, furnished a fairly comfortable and rapid means of travel. Later these *surface* cars, as they are called in New York, were run by electricity instead of by horses.

Soon the surface cars could not accommodate the growing population. It was necessary to improve the car service, and a new plan was adopted. This was to construct railroads above the streets. Such roads are



Photo by Brown Bros.

#### A Horse Car of the Kind Used in New York City Forty Years Ago

called *elevated* roads. They are built on strong iron and steel supports, and the cars rush along above the street on a level with second- or third-story windows. At intervals there are stairways leading from the streets

to the stations above. New York is said to have been the first city in the world to build elevated railroads. She opened her first line in 1870.

We can now ride from one end of the city to another on the elevated roads. Trains run almost constantly day and night. At first steam engines drew the trains, but now only electricity is employed.

In 1884 cable cars were introduced. These furnished another rapid means of getting about, and made it easier for people to live at some distance from their places of business.

Thousands of people who do business in New York City live in other places. If you look at a map you will see that Brooklyn is separated from New York by the East River. Over the great Brooklyn Bridge, which was opened in 1883, thousands of persons pass daily. Since that time the Williamsburg and other bridges have been opened. Ferries carry many passengers, and in addition there are several tunnels passing under the river, in which trains are run.

Many people who do business in New York live on the New Jersey side of the Hudson River, which is sometimes called the North River. The North River is not bridged, but there are many ferryboats, and trains are run through tunnels under this river also. At Thirty-third Street is the Pennsylvania Station, and at Forty-second Street is the Grand Central Station. At these stations one may take a train for any section of the United States.

Notwithstanding all these means of transportation the streets of New York City are crowded. Morning and evening the crowds are especially large. Why?

All day long on the down-town streets pass great numbers of autotrucks loaded with all kinds of merchandise. Some are going to or coming from the wharves. Some are going to freight depots and others are carrying their loads from one place of business to another.



© Ewing Galloway

### Brooklyn Bridge

One of five great bridges between Long Island and Manhattan.

There are many taxis, autobuses, and automobiles, and on some streets electric cars add to the crowded traffic. A throng of people is hurrying in every direction. When a blockade occurs, it quickly spreads for blocks. There is more traffic on Fifth Avenue than on any other of

New York's thoroughfares. In order to control the traffic, towers have been erected every few blocks. From these are signaled green and yellow lights indicating whether the traffic is to go across town or up and down. These lights are changed every few moments, warning being given of the change by a red



© Ewing Galloway

### **The Pennsylvania Railroad Station, New York City**

light. Thus, all traffic for blocks moves in the same direction at the same time.

About twenty years ago the people decided upon another means of travel. Great tunnels were dug under some of the streets. In these tunnels railroad tracks were laid, and on these tracks trains pass from one end of the city to another, carrying their loads of passengers.





*Photo by Brown Bros.*

**A Western Stagecoach, Used before the Day of the Automobile**

These underground lines of travel are called *subways*. The subways and the cars are well lighted, and as the trains run under the streets and not upon them, there are no crossings to block the cars.

At intervals there are stations. These are entered from the surface of the streets. A sign tells the passen-



*Photo by Brown Bros.*

### A Subway Station

ger whether trains taken at a given station will carry him up or down town. The passenger descends a flight of steps to the station, and by placing a nickel in a slot beside a gate, the gate is mechanically opened. The passenger then passes through the gate to the platform where the train is boarded.

How strange it seems to be whirled along in a train running below the surface of the earth! Above, the street is filled with electric cars and vehicles of many kinds as well as foot passengers. Sometimes above the same street are the crowded elevated trains. All of these means of travel are needed to-day in the great city of New York, where less than one hundred years ago the only public conveyances were omnibuses and carriages.

Who was the first President of the United States?

Why was this man elected?

What was the capital of our country at that time?

What is a mire?

How did the first street cars of New York City differ from those in use to-day?

What are surface cars?

Of what advantage are the elevated roads?

Name two ways in which New York City and Brooklyn are connected.

What are wharves?

What do you think the most interesting means of travel in New York City?



## ROADS

IN order to travel readily on land from place to place roads of some kind are necessary. This is true whether we travel in a wagon, a carriage, an automobile, or a train. All civilized nations spend large sums of money in making and repairing roads, so that trade and travel may be benefited as much as possible.

In the days when people traveled on foot or on the backs of animals no roads were needed. Trails or paths led from house to house and from village to village. Many of the trees along the forest trails were *blazed*; that is, some of the bark on the side next the trail was cut off with an ax or a hatchet. These scars on the tree trunks served as a guide, for they could easily be seen when on account of snow or underbrush the trail might be partly hidden.

There are areas in the western part of our country and in other countries where there are no roads even to-day. Trails follow the streams into the mountains and wind back and forth along their slopes. Miners, hunters, fishermen, forest rangers, and others make much use of these lines of travel. Sometimes the travelers are on foot and sometimes in the saddle. Many pack animals may be seen patiently bearing their loads of supplies to some mountain camp.

The camels that travel across portions of the Sahara, or Great Desert in Africa, do not follow roads but mere

paths across the shifting sands. Both the camels and their drivers need sharp eyes, for the drifting grains of sand sometimes cover the path. The springs are far apart, and getting lost is a very serious matter.



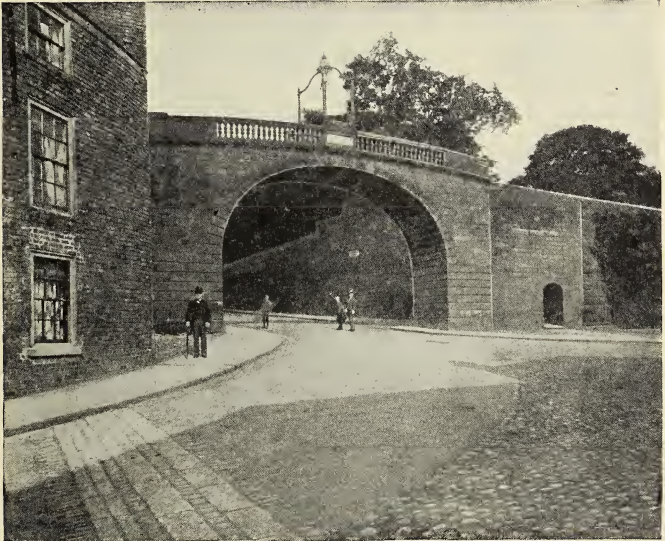
© Mutual Film Corp.

### **These Burros Carry Heavy Loads up the Mountains**

In a region in which there are rivers the early settlers build their homes along these, and so travel by raft, canoe, and larger boats is very common. This delays road building until the land at some distance from the streams is settled.

When the people of the past learned how to make

and use carts and wagons, roads became necessary. The Romans were probably the greatest road builders of ancient times. It is said that they built about fifty thousand miles of highways. So carefully did they construct them that, in some cases, they are still in use.



*Photo by Elmendorf © Ewing Galloway*

### **A Road in England Built Many Hundreds of Year Ago by the Romans**

Hundreds of years ago the Incas, the rulers of Peru, built splendid stone roads through their lofty mountain country.

In the early days of the history of our country roads were few and poor. The population was small and the

people had little money. Because of this the roads were generally built by companies and so were not public highways. Each person who used these roads paid a fee called a *toll*. At the places where toll was collected there were gates placed across the roads. The gates were armed with sharpened poles called pikes. As the pikes would turn people back or prevent them from riding through without paying, such roads were called *turnpikes*. To-day there are few toll roads or toll bridges in use in our country.

For a long time after the founding of Jamestown the colonists did not go west of the Appalachian Highland, but as the number of settlers increased, more land was needed. Brave and hardy pioneers cut paths through the forests and over the mountains and returned with news of the great fertile plains beyond. Encouraged by these reports, many people left their homes on the Atlantic Slope, and in wagons, generally drawn by oxen, started west. There were no roads at first except those made by cutting away the brush, and travel was very difficult. Finally in 1811 our government began the construction of a famous road called the "Old Cumberland Road." It extended from Cumberland, Maryland, nearly west to St. Louis, a distance of about seven hundred miles. The road was opened in 1818, and for many years it was an important line of travel.

There are in the United States about three million miles of wagon and auto roads. This distance is more than one hundred times the circumference of the earth. Formerly most of these roads were of dirt. The land is plowed and the dirt drawn toward the center of the road by means of scrapers. This forms a ditch along

either side into which the water runs after a rain. During the spring such roads, especially if made in clay soil, are almost impassable. The wheels of loaded vehicles sink deeply into the mud. Frequently horses are used to pull automobiles out of the mire. Putting a coating of sand or gravel on such roads improves them very much, for these materials dry quickly.

Sometimes in the early days *corduroy* roads were built. Two rows of logs were placed on the ground like the rails of a railroad track. Across these, smaller logs or poles were laid and the spaces between filled with dirt. Such a road was much more solid than a dirt road, although it was rougher and more expensive. In some places roads of plank were made. These were smoother than the corduroy roads.

Where crude oil is plentiful and cheap, country roads are often oiled. The oil forms a smooth, hard coating on top from which the water runs after a rain. During the summer, or dry season, such roads are very free from dust. Very sandy roads are often covered with straw, hay, or the threshed stalks of bean plants.

In towns and cities where there is a great deal of travel the roads are usually well made. As there are many persons to share the expense, the burden on each one is not great. City roads are called *streets* or *avenues*. As dwelling houses and places of business are close together, there must be many streets in order to accommodate the people.

City streets are made in various ways. Some are paved with blocks of wood and others with blocks of stone or with cobblestones, or with a hard, tar-like substance called *asphalt*. Many streets have concrete pav-



ing. Because of the constant use and the heavy loads the streets need constant attention. In addition to repairing there is sprinkling and sweeping and in the cold climates the snows of winter must be removed.

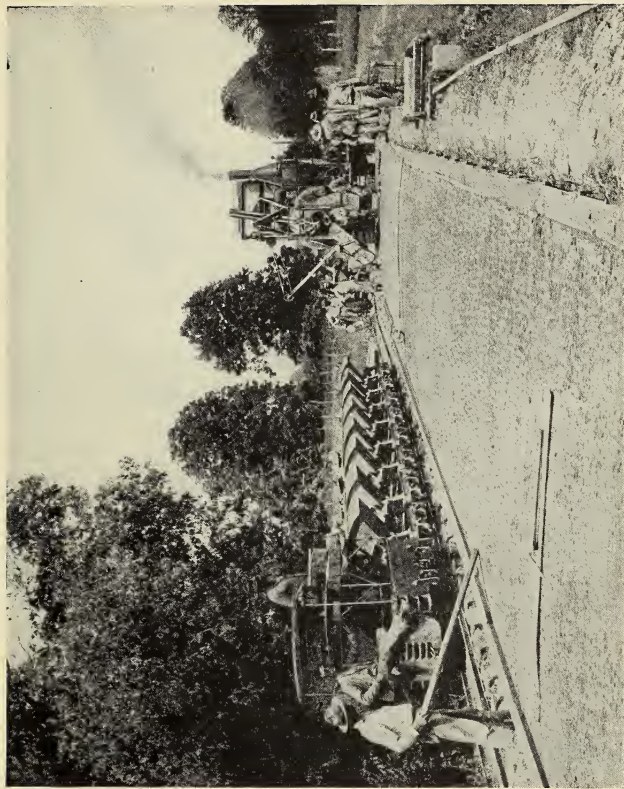
The use of automobiles and autotrucks has led to the building of excellent country roads almost as smooth



© Ewing Galloway

**This Road Has a Concrete and Limestone Bed with an Asphalt Surface**

as a floor. In making such a road the ground is plowed, pulverized, sprinkled, and rolled. Broken rock, sharp clean sand, and cement are mixed in a revolving mixer for about one minute. The mixer is moved from point to point on the road. Enough water is put in to cause the mixture to flow out of a spout on to the road. The concrete is then pressed and the surface smoothed. In



*Photo by Ewing Galloway*

## **Building a Modern Concrete Road**

order to give the road greater strength small steel rods are sometimes imbedded in the concrete. Wire is used to tie the rods together.

As soon as the concrete begins to harden it is covered with burlap and sprinkled. If the weather is hot the road is covered with a layer of earth or with water. This prevents cracking. In about three weeks after the concrete is laid the road is opened for use.

Our government now contributes money to states for the improvement of their roads. The states receiving such aid must furnish an equal amount of money and attend to the construction. Good roads decrease the cost of transportation, because larger loads can be hauled and they can be moved rapidly. Good roads have led to great increase in travel by automobile.

When did roads become necessary?

What is a blazed trail?

Why do some parts of the world have no roads?

Why is traveling on a desert a serious undertaking?

What is meant by ancient times?

How do you know that the Romans built good roads?

Read aloud the sentence which tells why there were few roads in our country in early days.

Why would riding over a corduroy road be unpleasant?

Tell how concrete roads are made.

Of what value are good country roads?



## TRAVELING BY TRAIN

"TICKETS!" said the gate tender. Mr. Blake handed the man four long strips of paper. He examined them closely, looked sharply at Mr. Blake and the three people who followed him, and then punching the tickets he handed them back with the words, "Track number two."

Our friends made their way through the gate and toward the train, to which a porter with a *red cap* had carried their baggage. Everything seemed to be in confusion. There were several tracks, and upon each one there was a train. Bells were ringing, engines were panting, and people were hurrying to and fro along the platforms of a great railroad station in Chicago.

At last Mr. Blake stopped beside one of the long cars. "Los Angeles?" asked the porter. "Yes," replied Mr. Blake. The porter took the hand baggage, and they all went into the car. "Here we are," said Mr. Blake, "number six."

Walter and Grace were very anxious for the train to start, as they were going to California. They watched the passengers as they hurried aboard the train, and the trucks loaded with trunks and suit cases as the men drew them to the baggage car.

Presently there was a shout of "All aboard!" The conductor waved his hand to the engineer, and in another moment the train began to move. The great city

with its lofty buildings and its rush and roar was soon left behind, and the fertile prairies of Illinois stretched before the travelers.

Late that afternoon the train crossed the Mississippi River at Fort Madison, Iowa. The children had often traced on maps the course of the "Father of Waters," but they had never before seen the stream. They were much interested and asked their parents many questions as the train slowly crossed the bridge.

"In the early days," said Mrs. Blake, "when people crossed the plains in covered wagons drawn by oxen or horses, there were no bridges over the river."

"How did people cross?" asked Walter.

"They were carried over on large flat-bottomed boats called *ferryboats*," replied his mother.

"Did people travel across the continent in wagons?" inquired Grace in surprise.

"Yes," replied her mother; "for we have not had railroads very long. The journey was a very tedious one, you may be sure, as it took several months to go from Illinois to California, while now it takes but three days."

"When was the first railroad built?" asked Walter.

"In England there were roads called railroads as early as 1682," said his father. "They were constructed for the purpose of making it easier to haul coal from the mines. Wooden rails were placed on the ground, and the coal cars were drawn by horses."

The children looked puzzled. "I don't see why they used horses on railroads," said Walter.

"Because locomotives had not then been invented," returned Mr. Blake. "The invention of the locomotive

was a wonderful thing. Different men worked on the problem, among them James Watt, a Scotchman. It was not until 1804, however, that the locomotive became a success. In that year Richard Trevithick made and operated one in Wales. It was used to haul coal from a mine."

"I thought that George Stephenson invented the locomotive," said Mrs. Blake.

"He is often given the credit for having done so," replied her husband. "His first locomotive was operated on July 25, 1814. It also was employed in hauling coal, and it ran at the rate of four miles an hour. On September 27, 1825, Stephenson ran a train which carried both coal and passengers. People came from far and near to see the train, and they followed it as long as they could keep up. When under full headway the train ran at the rate of fifteen miles an hour. This was not a real passenger train, for the people rode in coal cars, but the experiment showed that engines could be used for drawing people as well as coal."

"When were real passenger trains used?" inquired Grace.

"The first passenger train was operated in England in 1829," said Mr. Blake. "The road extended from Liverpool to Manchester. Many of the country people were not in favor of this method of traveling and called it 'traveling by teakettle.' Why was it spoken of in this way? They were afraid that accidents would occur. In speaking of the railroads, a writer in an English magazine of that time said that he hoped that Parliament would limit the speed of trains to eight or nine miles an hour. He did not think that

it would be safe to run them at a greater speed than that.

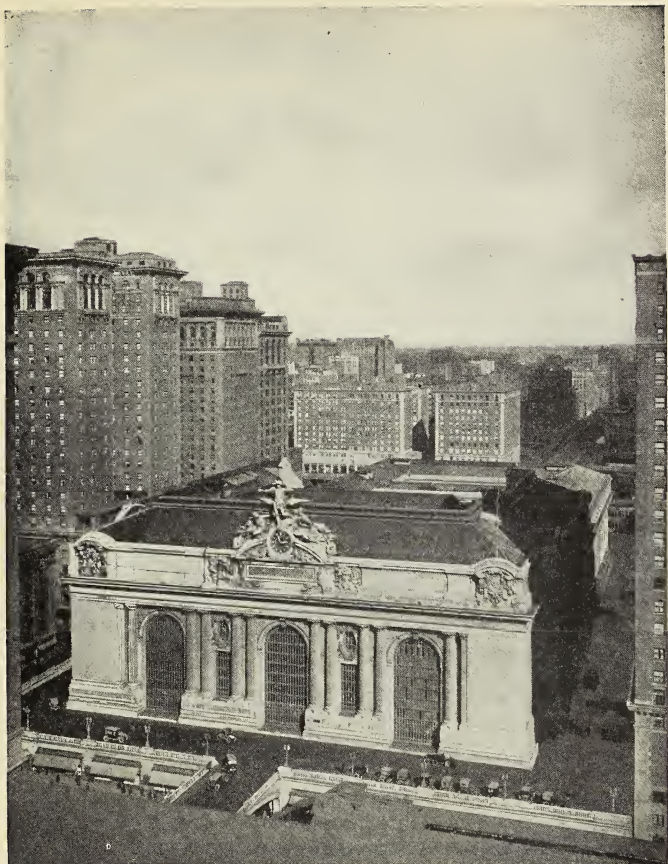
"On October 6, 1829, an engine called 'The Rocket,' which had been built by Stephenson, took a prize on the Liverpool and Manchester Railroad, although it averaged but fourteen miles an hour and weighed only four and one-half tons. The Rocket may still be seen in the Patent Office in South Kensington, London."

"Tell us about the first American railroads," said Mrs. Blake.

"Well," replied her husband, "our first roads were like the first roads in England. They had wooden rails and the cars were drawn by horses. Such a road, but three or four miles in length, was constructed in 1826. It was built to furnish an easy means of hauling granite from the quarry at Quincy, Massachusetts, for the Bunker Hill Monument.

"In 1828 a portion of the Baltimore and Ohio Railroad was built. Horses were used for one year, but after that locomotives drew the trains. The first engine came from England, but in 1830 the 'Best Friend' was built in our country and used on this road.

"The 'De Witt Clinton' was one of the first locomotives made in the United States," continued Mr. Blake. "It was named for the man who made it. It drew a train of three cars, but so small were they that they carried but fifteen passengers each—nine riding inside and six on outside seats. This train ran on a part of what is now the New York Central and Hudson River Railroad. The date was 1831. This train is still on exhibition at the Grand Central Station in



© Ewing Galloway

### **The Grand Central Station in New York**

**This is one of the two great passenger terminals in New York City. The station is very large, but appears dwarfed by the tall buildings that surround it.**

New York, and you may be sure that it looks very small indeed."

"I should like to have seen some of those old engines and cars," said Walter.

"They were very different from those of to-day, you may be sure," his father replied. "The engines had no cabs. Water and wood, which was used for fuel, were carried on a small flat car. The cars were nothing but stagecoaches, and there was no means of keeping the smoke and bits of burned wood from entering, for the windows were simply openings. The trains had no brakes, and so of course could not be stopped quickly.

"For a long time there was no means of either lighting or heating the trains, but later lamps and stoves were used. Little by little trains have been improved. The one in which we are traveling is called a 'vestibuled train.' It is made up of a mail car, a baggage car, sleepers, observation car, and dining car. Only passengers having Pullman tickets are carried on this and similar trains.

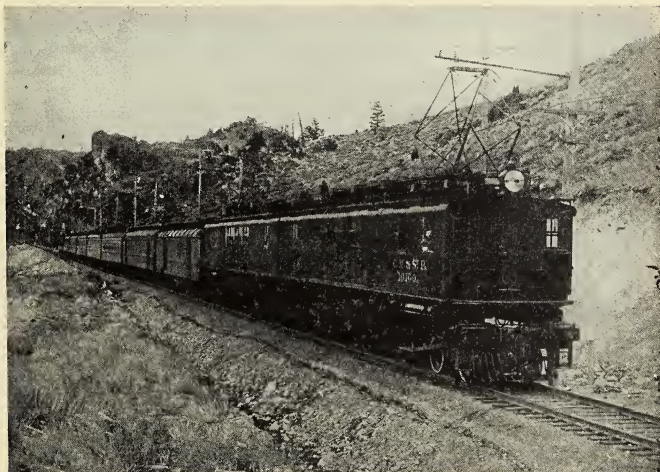
"In some parts of our country crude oil is burned by locomotives. This increases the comfort in traveling because there are no cinders flying back from the engine. The trains that run in and out of New York City are operated by electricity. For a long distance on one of the railroads in Montana and Washington, electricity drives the trains. This saves a great deal of coal.

"Freight as well as passenger service has been improved. Trains run faster, the cars are larger, and the cost of shipment has been reduced. Specially con-



structed cars make it possible to ship milk, vegetables, and fruit for long distances without spoiling. Oranges, lemons, and grapefruit are shipped during the winter in cars that keep out the cold.

“Both city and country people are interested in freight service. But for this, the farmer would receive



*Photo by Ewing Galloway*

### **An Electric Engine Hauling a Passenger Train in the Rocky Mountains**

much less for his crops and some would spoil. Coal, lumber, and manufactured articles are distributed by freight trains. The life of our cities depends in large measure upon supplies received by freight.

“Sometimes during the early days of railroading,” continued Mr. Blake, “the locomotives were not used

when it rained. In 1832 this statement appeared in a Philadelphia newspaper: 'Notice—The locomotive engine (built by M. W. Baldwin of this city) will depart daily, when the weather is fine, with a train of passenger cars. On rainy days horses will be attached.'"

Mother and children laughed at this, and Grace asked her father how he would get to his business if engines were not used on rainy days. Mr. Blake reminded his daughter that there are many ways of traveling to-day which people knew nothing about in those days.

"How long have we had railroads in Chicago?" asked Walter.

"Let me see," replied his father. "'The Pioneer' was the first locomotive brought to our city. That was in 1848, only seventy-five years ago, and yet to-day Chicago is the greatest railroad center in the world. The Pioneer was run on a part of what is now the Chicago and Northwestern Railroad."

"Are there many railroad stations in Chicago?" inquired Grace.

"Not very many," answered her father. "There are *union stations*, that is, stations used by two or more railroads. Several lines use the station from which we started. Railroads terminate in Chicago instead of running through it. If one enters the city by rail and wishes to go on to another city, he changes lines. It may or may not be necessary to leave the station for this purpose."

"Waiting for a long time in a station must be tiresome," said Walter.

"Much is done for the convenience and comfort



of travelers," replied Mr. Blake. "There are waiting rooms, a news stand, a fruit stand, a drug store, small shops, a telegraph office, telephone booths, lunch counters, and a restaurant. There is an information bureau to furnish information to all who seek it. Those who need to transfer to another line find autobuses, taxis, and street cars convenient."

"How do they handle the freight?" asked Walter.

"The city is a terminal point for freight as well as for passengers," answered his father. "Day and night trains are entering the city bringing grain, flour, potatoes, fruit, milk, cattle, hogs, sheep, and many other things. Other trains carry away the surplus manufactures of Chicago.

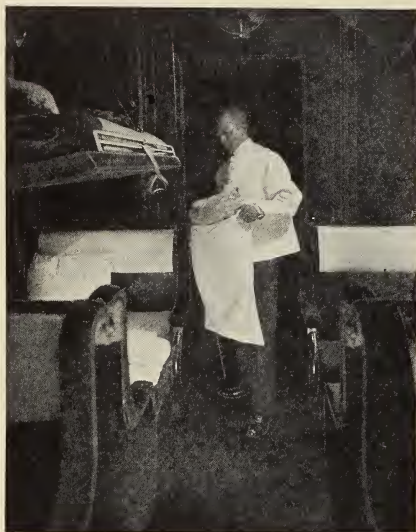
"In the outer parts of the city many cars are switched from the lines on which they enter to a belt line. This transfers them to the railways on which they are to leave the city or transfers them to some other part of Chicago.

"The freight depots and yards are busy places. Many men are employed in the offices. Others load and unload the cars and trucks and transport the freight to mills, factories, warehouses, and stores. But for this constant movement of freight from one part of our country to another, we could not live as we do to-day."

"I think that it is about bedtime," remarked Mrs. Blake. The porter was already making up the berths for the night. The children were very much interested in these, and if you have never ridden in a sleeping car, I am sure that they would interest *you*.

The seats face one another in pairs. The cushions at the back of each seat are taken out and placed flat

beside the two which have been used as seats. This forms a bed. Just above each group of seats there is a handle in the roof of the car. Turning this, the porter pulls down what proves to be another bed. It is fastened to the ceiling by means of small chains. On



Courtesy The Pullman Co.

**"Making Up" a Berth in a Pullman Car**

this bed are blankets, mattresses, and pillows for the upper and lower beds, or *berths*, as they are called. In addition to the bedding the porter finds in the upper berth two thin boards and two pair of heavy curtains. The boards he places in an upright position between the backs of the seats and the roof of the car, thus forming partitions between the sections.

Walter and Grace watched the porter as he hurried to a little closet in one end of the car. From this he took clean sheets and pillow slips, and the beds were soon arranged. Then taking the curtains, he hung them before the berths. Walter noticed that there was a number attached to each curtain. Walking through

the car, he found that there were twelve lower and twelve upper berths in it.

The porter now brought a short stepladder, and Mr. Blake and Walter climbed into the upper berth. How strange it seemed! The car rocked and the engine shrieked, but Walter was soon in the land of dreams.



*Photo by Ewing Galloway*

### **In a Dining Car**

The next morning the family went into the dining car for breakfast. The car was arranged much as any first-class restaurant would be. There were small tables on each side of the aisle.

Our friends examined the menu cards, and Mr. Blake wrote a list of the things desired on a piece of paper and handed it to a waiter.

"Where is the food prepared?" asked Grace.

"There is a kitchen in one end of the car," her mother replied, "and the cook is kept busy, you may be sure."

After breakfast the family went back to the sleeper. The berths had disappeared and the car was once more a sitting room. Mr. Blake pushed an electric button, and the porter appeared. "A table, please," said Mr. Blake. The table was brought and set up between the seats. It had small brass projections at one end which fitted into openings in the wall of the car. At the other end was a leg by which it was supported.

Mr. Blake was busy writing letters for some time. Soon after he had finished, the train came to a stop, and the whole family went out for a short walk. They walked forward to the mail car, and Mr. Blake dropped his letters through a small opening in the side of the car. "This is a regular post office," he explained. "Unlike a post office in a town or city, it keeps moving. Within the car there are many mail sacks. Some will go right through to California, and some will be dropped off along the way. Many others will be taken on, also. The letters which I have posted will soon be thrown off together with others, and they will be put on the first mail train going to Chicago." Just then the conductor's shout of "All aboard!" was heard, and our friends went back into their car.

Later in the day Walter asked his father to tell him who invented sleeping cars. He pointed to the door of the car on which was the word *Pullman*. "You know," said Mr. Blake, "that the town of Pullman is south of Chicago. Mr. George M. Pullman, who established the town, was the inventor of the modern sleeper, although

a more crude style of sleeping car had been invented by a Mr. Woodruff in 1856. Just think how tiresome it would be to take a long journey and not be able to lie down! Many years ago travelers did not have the comforts which modern cars afford. At first the berths were little more than shelves upon which people slept.



*Photo by Ewing Galloway*

### **Trains in Europe Are Quite Different from Our Trains**

They were stationary, and therefore the cars could be used as sleeping cars only. Many years of study were required to bring the cars to their present condition."

"Are there railroads in all parts of the world?" inquired Grace.

"They are found in most countries," answered her father, "although there is more travel by rail in America



and Europe than on other continents. The character of the trains differ somewhat in the different countries. In European countries the passenger cars are divided into *compartments*. Each compartment seats but a few people, sometimes not more than six. Each com-

partment has a door which opens on the side of the car. Before the train starts the doors of the compartments are closed."

"I shouldn't like that," said Walter. "What do the people do when meal time comes?"

"They may tell the brakeman, or the *guard*, as they call him, what they want. He telegraphs ahead, and at the proper place the meals are brought on trays to the cars and eaten



Photo by Ewing Galloway

### An Observation Platform on a Transcontinental Train

while the train is going. In America, when there is no dining car attached to a train, travelers secure their meals at stations where stops are made for that purpose.

"Sleeping cars are not as common in Europe as in the United States, because people do not travel long

distances so often as we do in America. In Russia, sleeping-car passengers frequently carry their own bedding."

As the train rushed through state after state the children saw many strange and interesting sights. At last, after having crossed prairies, mountains, and deserts, the train climbed over a pass, on each side of which there were snow-capped peaks, and then rushed down into a valley which seemed to belong to another world. Orange trees, bending under loads of golden fruit, were on every hand. Roses blossomed on cottage walls. Snow-white callas lifted their heads in long rows. Everywhere there were sunshine, blossom, and fragrance.

The long journey was soon at an end. Our friends had traveled two thousand miles on a railroad train, and had been almost as comfortable all of the time as they would have been in their own home.

Where were Walter and Grace going?

From what city did they start?

Use a word that means the same as lofty.

Describe a prairie.

On a map locate the "Father of Waters."

What is a tedious journey?

How did the first railroads of England differ from those of to-day?

Where and what is Wales?

What did the locomotives of early days use for fuel?

Tell how trains have been improved.

How has freight service been improved?

How would country people suffer if we had no freight trains?

How are the people in cities benefited by freight service?

What is a menu card?

How do the passenger cars in Europe differ from those in our country?

## A JOURNEY IN A JINRIKISHA

"AT last everything is ready for our long journey," said Mr. Sheldon as he finished strapping a trunk and turned the key in the lock.

"Yes," replied his wife, looking about the room nearly filled with trunks and suit cases, "I believe that we are ready."

"How many days will it take to reach Japan?" inquired Philip, who was anxious for the journey to begin, for he was eager to see the "Land of Chrysanthemums."

"About sixteen days, including a stay of twelve hours in Honolulu," returned his father. "You will always remember that in 1923 we celebrated July Fourth in Japan."

"Sixteen days on the water?" asked Fannie, opening wide her blue eyes in surprise. "That is a long time."

"Although the voyage is a long one, you will enjoy it, I think," said her mother. "There will be the great ocean with its changing colors and the foaming track which the ship leaves behind it. By moonlight this will appear like a silver pathway. Occasionally we may see a whale lifting its dark body partly above the waves and spouting two streams of water from its head before disappearing beneath the surface. Then we may pass a ship, or even more than one, and that is quite an event at sea. Besides, you will become acquainted with other



children, and you can play games, and take long walks on the vessel."

"You can't walk very far on a ship, can you?" inquired Philip.

"The *President Lincoln*, the ship on which we are to make the voyage, is nearly a city block in length," replied his mother. "You can walk around the deck as many times as you please."

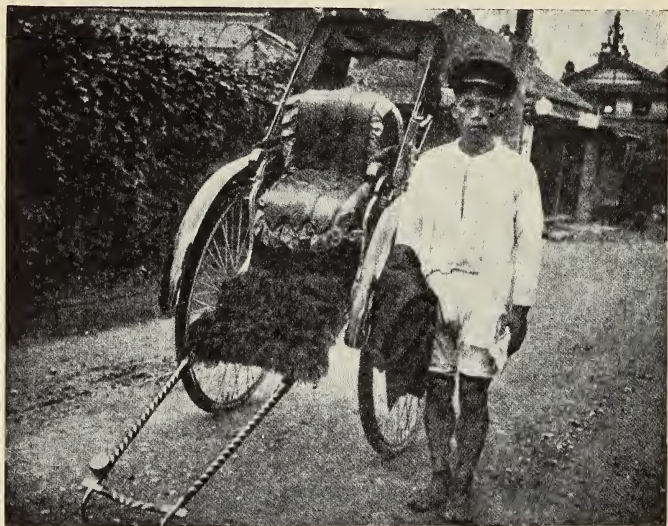
The next morning the family crossed the bay in a ferryboat from their home in Oakland, and boarded the *President Lincoln* in San Francisco. Passengers were bidding good-by to their friends, and freight and baggage were being loaded. Soon the great ropes which held the steamer to the dock were cast off, and the vessel steamed through the Golden Gate and out to sea. Gradually the hills seemed to sink below the horizon, until only the tops of the highest ones could be seen. A little later there was nothing in sight but the restless water.

At last the long journey came to an end, as all journeys do, and the passengers crowded eagerly forward, for they were anxious to view Yokohama, the city at which they were to land. As the *President Lincoln* drew up beside the wharf there were shouts from the sailors, shouts from the men on shore, and the throwing of ropes with loops at the ends over the tops of great posts. Now the passengers, taking their hand baggage, walked down the gang-plank to the wharf.

As they left the wharf there was a chorus of strange voices from a company of Japanese men, who were making many gestures. "Rik'sha! Rik'sha!" the men were crying, as they beckoned to the travelers.

"We will take a carriage to the hotel," said Mr. Sheldon, with a smile. He set down his suit case and walked to a sturdy-looking young fellow.

"A carriage?" said Philip, in surprise; "I don't see any carriages."



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### The Rickisha of Japan

How would you like to ride in one of these carriages?

"Those are Japanese carriages," replied his mother, pointing to a row of two-wheeled carts. "They are called *jinrikishas*, which means 'man carriage.' Of course there are street cars and automobiles but many *jinrikishas* are still used, as you will see."

"Oh, yes," said Philip, "I remember having read about the jinrikishas, but when father spoke about a carriage I didn't suppose that he meant one of those carts."

While Mr. Sheldon was making a bargain with the jinrikisha man, the other members of the family observed the vehicles closely. They were carts having two wheels, with shafts attached. Over the wheels were guards similar to those used on automobiles in the United States. These guards were to keep the mud from flying into the carts. Some of the jinrikishas were made to carry but one passenger, while others were large enough to carry two. While some of the carts were open, others had tops of oiled paper. These could be raised and lowered. They served the double purpose of keeping the passenger dry during rains and of sheltering him from the sunshine.

"Look at that jinrikisha," said Fannie, pointing to one which they had not before noticed. It was elaborately decorated with beautiful chrysanthemums on the sides and back.

"And at that one just beyond," cried Philip, "with the dragons on it!"

Mr. Sheldon now stepped up and said that they were ready to start. He helped his wife and Fannie into one jinrikisha, while Philip climbed into the next one, and his father took his place beside him. The jinrikisha men, who are called *kikis* (ki'kis), stepped between the shafts, and taking one in each hand they started off at a brisk trot.

The children were quite excited. Imagine yourself going through a city in a carriage drawn by a man.

Several jinrikishas were passed before the hotel was reached, but as travel by this means is slow most people use automobiles or street cars just as they do in our cities.

The man who was drawing the vehicle in which Fannie and her mother were riding wore a large, white, oval-shaped hat, a red jacket on the back of which were curious-looking letters, and short black trousers. He was without stockings. What do you suppose he wore on his feet? You cannot guess, I am sure. Sandals made of rice straw!

"Oh, dear!" whispered Fannie, when she noticed this. "Don't you suppose the pebbles hurt the man's feet dreadfully?"

"No," replied her mother, "for he has become accustomed to stepping on them with shoes of that sort; besides, you know, American boys run barefooted over stones and stubble."

"Surely the sandals do not last long," said Fannie.

"Only a short time," said Mrs. Sheldon. "They cost but little, however. I will ask our kiki about them, for I heard him talking English with your father."

"They are quite cheap," said the Japanese. "We call the sandals *waraji*" (war a'ji).

The kiki who drew Philip and Mr. Sheldon was dressed like the other except that he wore a blue jacket.

"What do those letters and figures on the man's back mean?" inquired Philip.

"Those," replied his father, "give the name and number of the kiki. These men pay a small tax to the government for the privilege of running their jinrikishas. They are required to take out a license just as

are those who operate taxis and autobuses in our country."

Just then they reached the hotel, and the kikis dropped the shafts so suddenly that their passengers were nearly spilled out. They all laughed, and the Americans learned later that this is a common custom. After carrying the baggage into the hotel the kikis bowed and departed.

The hotel was conducted by Europeans, for there were at that time many Americans, English, Germans, and other foreigners in Yokohama. From the veranda of the hotel a great conical mountain could be seen to the southwest. Through the clear atmosphere it appeared to be but a few miles away, and the children were much surprised when their father told them that it was sixty miles distant. Summer and winter it wears a crown of white. It towers far above every other peak in the kingdom, and it is the sacred mountain of the Japanese. "Fujiyama" it is called. See if you can locate it on a map of Japan.

The next day our friends took a train for Tokyo, the capital of the empire, for the "Sunrise Kingdom" has railroads as well as many other improvements, Yokohama and Tokyo are but eighteen miles apart, and the first railroad built in Japan connected these two cities. This was in 1872. Do you remember when and where the first railroad was built in our country?

The passenger cars contained rooms called *compartments*. The people who travel first class ride in one compartment, those who travel second class in another, while there is a third for passengers holding third-class tickets.

The children and their parents were much interested in Tokyo. It was a large city which had been made larger by annexing several towns. Between these towns beautiful parks occupied a part of what was once open country. They found in the newer sections, wide streets, beautiful buildings, street cars, and electric lights.

In the older parts of the city they found few tall buildings. Many of the shops seemed without fronts, being so made that they could be thrown open on fine days. As they passed along the streets the children saw customers sitting on the floor in some of the shops, examining goods.

"What are those long boards in front of the stores?" asked Philip.

"Those," replied his father, laughing, "are the signs." They were curious signs, indeed, for they were read from top to bottom!

As Mrs. Sheldon wished to look at some fine carved ivory, they entered a shop, and Mr. Sheldon told the merchant what they wanted. He bowed, and ushered them into a little room. Soon a maid appeared with cakes and tiny cups filled with tea. She bowed when she entered, and she bowed when she left the room. The children soon learned that the Japanese, young as well as old, are very polite and courteous. After our party had enjoyed the refreshments, the ivory was sent for, and the purchase made.

A few days later Mr. Sheldon proposed that they visit a small town about twenty miles from Tokyo. The cherry blossoms were at their best, and they could be enjoyed on the way. Because of the novelty they



decided to travel in jinrikishas instead of in automobiles, so that evening arrangements were made with two kikis, and bright and early the next morning they started on their journey.



*Photo by Ewing Galloway*

### **A Street with Many Interesting Shops**

Notice the traffic policeman ready to direct jinrikisha traffic.

Soon they were out in the country with its low thatched cottages surrounded by gardens. Everywhere there were cherry trees loaded with beautiful white blossoms. As the breeze shook the branches the petals fluttered downward, looking like delicate snowflakes tinted with pink.

"I should like to be here when the cherries are ripe," said Fannie.

"The cherries are not good to eat," said her mother. "The Japanese are lovers of flowers, and they grow these trees in countless numbers simply that they may enjoy the beauty of their blossoms. They have a celebration known as the 'Feast of the Cherry Blossoms,' and another called the 'Feast of the Chrysanthemums.' "

About luncheon time they reached a village where they had refreshments. Before resuming their journey the head kiki asked if they would like to visit a Japanese school. Of course they said that they would. I wish that *you* might have walked into that school-room with Fannie and Philip. They were filled with wonder at what they saw and heard. The pupils were seated on the floor studying aloud. There was a din, you may be sure. The teacher also sat on the floor, and he smiled his approval at the noisy pupils. When the visitors entered, the master arose and bowed to them, and his pupils arose and bowed low.

Soon the teacher called a class to recite. The pupils stood before him, and he bowed to them. The pupils then bowed to him, and the recitation began. At the close of the recitation the teacher bowed again, and the pupils once more bowed to him and returned to their seats on the floor. This is quite different from your school, is it not?

Just before dark our friends reached the end of their journey. The same kikis had drawn them the entire distance, although they are usually changed several times in a day. It was a real Japanese inn at which

they stopped, and all of the native customs were followed. The kitchen was in the front of the house, and the hotel rates were posted on the wall.

After they had bathed, Mr. Sheldon ordered supper. The children expected to go to a dining room, and they could scarcely believe their eyes when a maid brought in four tables, and another maid brought in food. And such tables! They seemed to have been made for dolls, being about six inches in height.

"Where are the chairs?" whispered Fannie, as she looked about the room.

"We are to sit upon these mats," answered her mother. So each person sat down beside a tiny table and the meal began. There were three kinds of soup and as many of fish. Then came rice, tender bamboo sprouts, and the roots of lilies. After this they had cakes and tea.

When they had finished eating, the maids again appeared, and carried away the tables and dishes. As the day's journey had been a long one they were all tired, and in a short time they were ready for bed. Then came another surprise to Philip and Fannie, for they found that they were not to sleep in ordinary beds. The maids brought in padded quilts which they spread over the mats on the floor. But the strangest thing about the beds were the pillows. These were wooden cylinders, covered with cloth. Pieces of paper spread over the cylinders took the place of pillow slips.

After breakfast next morning the jinrikishas were brought to the door of the inn. There was much bowing as the guests departed, the whole household following them to their vehicles.

On the return journey they took a different road in order to see as much of the country as possible. They had gone but a short distance when they passed a small company of peasants. These men, although very poor, were traveling on foot to their sacred mountain. Every Japanese, no matter how poor, hopes to visit Fujiyama at least once. Each traveler carried several pairs of straw sandals. The Japanese travel considerably, and much of the traveling of the poor people is done on foot.

There had been some clouds in the sky in the morning, and while our friends were yet some miles from Tokyo, the rumble of distant thunder was heard. Dark clouds thickened in the southwest, and flashes of lightning darted across them. The kikis quickened their pace, but soon there came the patter of raindrops. Dropping the shafts, the jinrikisha men quickly raised the tops of oiled paper. Then opening a panel in the back of each cart, they drew out and put on what proved to be coats of rice straw. Such coats as these are commonly used by the Japanese as we use mackintoshes.

The journey was now resumed, but the increasing mud made the pulling of the carts much harder than it had been before. At the first farmhouse they stopped, and two young men were engaged to help. One end of a slender rope was attached to the crossbar of each jinrikisha, and the other fastened about the waist of a helper.

Darkness had settled down before the hotel was reached, and so the kikis stopped once more and lighted lanterns of oiled paper which were placed on either side of the jinrikishas. Soon the trip came to an end and

our travelers once more enjoyed the comforts of their hotel.

Several days after this the Sheldons started for the southern part of Japan. They visited a number of cities on the way. Just two days before the terrible earthquake of September 1, 1923, they sailed from Nagasaki. Although great sections of Yokohama and Tokyo were completely destroyed in that disaster, our friends like to think of these cities as they were when they visited them.

Philip and Fannie saw many wonderful things in Japan, but nothing is remembered with more pleasure than their journey in a jinrikisha.

On a map trace the voyage which Philip and Fannie took.

How could you amuse yourself while on an ocean voyage?

What is a gang-plank?

Must one travel by jinrikishas in Japan?

Describe a jinrikisha.

What beautiful sight may be seen from Yokohama?

How did the newer parts of Tokyo differ from the older sections?

How do you know that the Japanese people are polite?

Tell why you would have enjoyed the Japanese inn.

## TRAVEL IN CHINA

ON the opposite side of the Pacific Ocean from California is the republic of China. There are about four hundred million people in that strange land, or about four times as many as there are in the United States.

China is a very old country. It is so old that no one knows when it first was settled. The people of that land have done many wonderful things in the past, but for centuries they made very little progress. They have been slow to make use of the arts and inventions of other nations. During the last few years they have made much improvement, but in the interior of China they are still backward.

If you were to go to China, everything would seem very strange to you, just as our ways of living seem strange to the Chinese. You have probably seen Chinamen, and you know what odd-appearing clothes they wear. The men and the women dress very much alike.

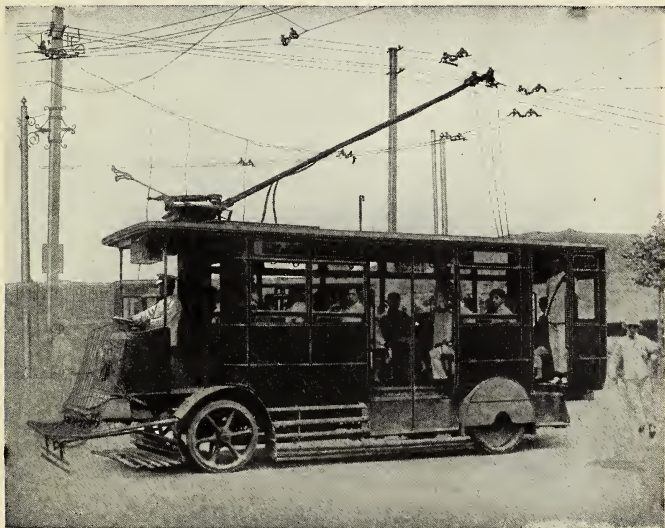
Some Chinese parents do many things which they think will deceive the evil spirits that are believed to be on every hand ready to harm their children. One of these customs is to give their children names that will indicate that they are not loved. The parents think that the spirits will not care to harm children who are not loved.

In a great city in our country everybody is in a hurry. Men, women, and children rush along the



streets, and crowd on the trains and street cars. No one seems to have a minute to spare. In a Chinese city we should see a different state of affairs. People seem to have plenty of time.

Although there are railroads in China they are not so numerous as they are in our country. The newer



*Photo by Ewing Galloway*

### **Some Cities in China Use Trackless Street Cars**

parts of the great cities are modern in every way, but in the older sections jinrikishas, wheelbarrows, and sedan chairs are in use

In the country districts, too, these vehicles are used, and very few people own horses. In the northern part

of the republic a clumsy two-wheeled cart is used. The Chinese used just such carts three thousand years ago. This shows how slowly sometimes people change their habits. These carts have neither springs nor seats, so you may be sure that they are very uncomfortable to ride in.

In northern China the roads are generally poor. In the spring they are often so muddy that the carts can hardly be drawn over them.

The northern part of China does not have as many visitors as does the central part. On that account hotel accommodations are sometimes poor there. You would not enjoy stopping at some of the inns. Often several people must occupy the same room in a building made largely of mud.

Let us step into one of these inns. The floors are of hardened earth. There is little furniture. Kerosene oil lamps furnish the light, for there is no gas or electricity, nor is there running water. In the great Chinese cities, however, there are excellent hotels.

There is much travel on the water in China. Much of the country is low and flat, and in addition to the rivers there are many canals which are used as lines of travel. One of these, the *Grand Canal*, is more than six hundred miles long, and was dug many hundreds of years ago. It connects the city of Hangchow with Peking, the capital of the country. Much of the trade in the interior of the country is carried on by means of this canal.

In addition to steamboats, clumsy-looking sailboats and rowboats are used. Often houses are built facing the canals just as houses in our country face the streets.

Boats are tied to posts at the steps. In fact, thousands of people in China spend their lives on boats, for they are too poor to be able to buy homes on land. The boats are like rafts with small houses built upon them.



© Ewing Galloway

### On the Yangtze River, China

Compare the sails and shape of the boat with those seen in other countries.

On these rafts there are sometimes very tiny gardens. How would you like to live month after month in such a home?

Many of the wealthy people of China have their own private boats, or *house boats*, by means of which they travel on the rivers and canals. Such boats are fitted

up in the best of Chinese style. The owners sometimes make rather extensive trips in them, for they carry their own provisions and are quite independent.

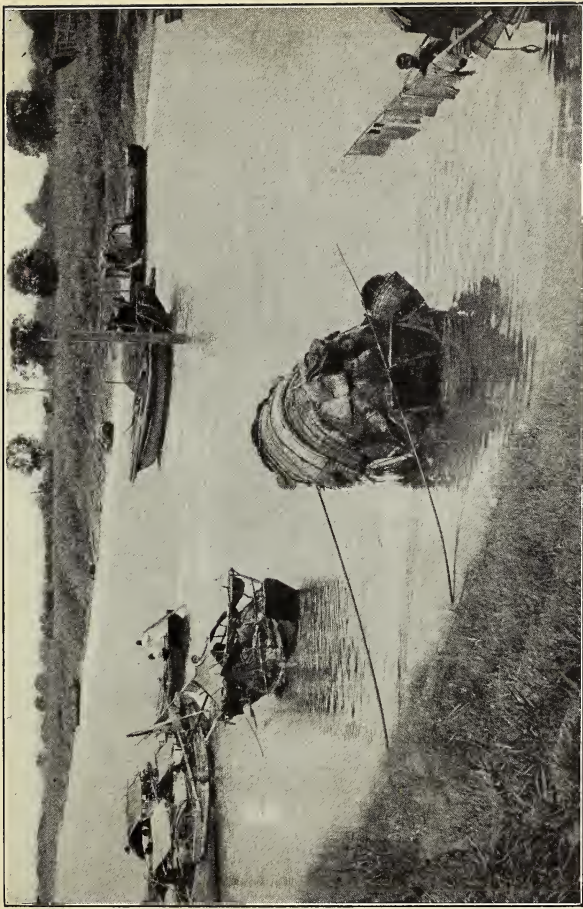
Another Chinese means of conveyance is the *sedan chair*. It seems strange to talk of riding in a chair, does it not? A sedan chair is usually made of bamboo and so is very light. The chair is placed upon a platform to each end of which poles are attached. The sides and roof are covered with cloth, sometimes with silk. The front is left open and serves as a door. The passenger backs in through this opening and seats himself in his chair. There is a little window at each side over which a curtain may be dropped. The chair and its passenger are carried by two men, one at each pole. This, you see, is very much like the palanquin.

But the strangest of all the ways of traveling in China is by wheelbarrow! In the central and southern parts of China the wheelbarrow is used a great deal. Just think of a farmer taking produce to town in such a thing!

Do you remember this Mother Goose rhyme about riding in a wheelbarrow?

When I was a little boy I lived by myself,  
And all the bread and cheese I got I put upon a shelf;  
The rats and the mice they made such a strife,  
I was forced to go to London to buy me a wife.  
The roads were so bad, and the lanes were so narrow,  
I was forced to bring my wife home in a wheelbarrow.  
The wheelbarrow broke, and my wife got a fall,  
And down came wheelbarrow, little wife, and all.

Often in the middle of the narrow, winding roads there are still narrower pavements made of brick or



*Photo by Ewing Galloway*

**Thousands of People Live and Travel in House Boats on Rivers in China**



stone. These pavements are for the use of wheelbarrows. There are very many men who make a business of transporting freight, using wheelbarrows instead of wagons. These men usually travel in companies, for



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**Chinese People Use the Wheelbarrow Both for Freight and for Passenger Transportation in the Country**

in this way they can help one another and also guard against robbers. A man sometimes pushes a load amounting to five hundred pounds, while loads of two hundred fifty to four hundred pounds are common.

Just as we have freight and passenger trains, so the



Chinese have freight and passenger wheelbarrows. In the cities wheelbarrows are not now in general use, although they have not entirely disappeared. Although they have no clanging bells, one can often hear wheelbarrows approaching, for the wheels squeak and groan most dismally. Sometimes the Chinaman hoists a sail over his wheelbarrow, for he says that he may as well make use of the wind on the land as on the sea. If the load is very heavy, one person sometimes goes ahead pulling at a rope attached to the wheelbarrow.

Chinese wheelbarrows are not like ours. The wheel is in the center instead of being at the front end. This throws the weight on the wheel rather than on the man. A rope, the ends of which are fastened to the handles of the wheelbarrow, passes over the shoulders of the man who pushes it. This relieves his arms somewhat. Along each side of the wheel is a sort of platform and on this the load is placed. There may be a passenger on each side, or freight on one side and a passenger on the other.

If you were riding on one of these strange vehicles, you would find that you sat so high that your feet would not touch the ground, although they would dangle downward. In order to prevent yourself from falling off, you would put one arm over the frame which is built up on each side of the wheel. Compare this means of travel with the electric or steam cars with which you are familiar.

About how many people are there in the United States?

Name an invention.

Describe a native Chinese inn.

Of what use is the Grand Canal?

Locate it on a map.

Would you like to live on a house boat?

How are wheelbarrows used in China?

Tell how the sedan chair and the palanquin differ.

## AN ELEPHANT RIDE

WHO has not enjoyed watching the great elephants at the circus? They are the largest four-footed beasts in the world. What a sight it would be to see a herd of elephants roaming wild in the forests! There are many wild elephants in India and Central Africa, and every year people hunt them.

Sometimes as many as a hundred of these animals are found in a herd. A full-grown elephant is eight or nine feet high at the shoulders, and may weigh as much as five tons. Only the very largest horses weigh as much as one ton.

Most of the male elephants in India have tusks of ivory, and, as ivory is very valuable, the animals have been hunted for generations for their tusks. But it is not for the ivory alone that the elephant is hunted. Although it is so much more powerful than man, it is easily tamed and can be trained to do many things.

Catching wild elephants is a dangerous undertaking. Formerly the hunters used to dig great pits in the forest and cover them with branches of trees. The animals were then driven into these pits. To-day a strong fence is built inclosing a somewhat circular area. A small opening is left, above which a gate is so arranged that it can be dropped instantly. Then a large number of men go into the forest and drive the animals into the yard. The gate is then dropped, and one by one the

elephants are caught by means of ropes and led out by tamed animals.

Sometimes the hunters ride into the jungle on the backs of tamed elephants. The wild animals, not suspecting danger in the presence of their fellows, are easily approached. A couple of hunters crawling on the ground fasten ropes about the legs of the animal which they wish to catch. The ropes are then tied to trees.

What a fuss the great beast makes when it discovers that it is captured! It makes a trumpeting noise with its trunk; it pulls up small trees and throws itself on the ground in rage. The hunters take care to keep well out of its reach, you may be sure.

After a few days the elephant discovers that it is useless to struggle, and within three or four months it will obey its master's every command. The driver is called a *mahout* (ma-hout'). He can make the elephant move forward or back, kneel, lie down, lift one foot, pick up articles from the ground, and do many other things.

How strange it would seem to ride upon the back of an elephant; yet for centuries people in India and other countries have ridden upon the backs of the huge beasts. To-day they are chiefly used in great processions on festival occasions and by tourists. A passenger elephant has a large box or car upon his back. This is called a *howdah* (hou'da). Sometimes the howdah is covered and sometimes it is not. Generally it is carved and decorated. Underneath the car are blankets which frequently reach nearly to the ground. The blankets often have gold embroidery and are

beautifully decorated. In the car are seats having velvet cushions. Just in front of the car sits a mahout, and sometimes another walks beside the elephant.

Let us mount one of the great animals and take a ride. The mahout places a short ladder against the



Going for an Elephant Ride

side of the elephant and we climb up and seat ourselves in the car. Because we are riding over the shoulders of the animal, there is a curious lurching motion when he travels.

Our driver is dressed in white, for India is a hot country. Upon his head he wears a *turban* made of

many yards of cloth. His feet are bare. His complexion is quite dark, as is that of all natives of India. He sits upon the neck of the elephant and guides the intelligent animal partly by words and in part through the use of a short stick.

How strange it seems to be riding above the heads of the people who are on foot! We are surprised to find that the elephant can travel quite rapidly. It is easy to carry on a conversation, for there is no noise to hinder.

We are on a very fertile plain through which the Ganges River flows. Near the mouth of the river is the great city of Calcutta, the capital of India. Every year for many centuries the Ganges River has been overflowing its banks and spreading rich sediment over the land. The population is very dense, and most of the people are poor. They do not have the conveniences which we have, and many of their customs seem very strange to us.

As we ride along we pass many clumsy carts drawn by bullocks. Almost every one of these animals is white. Near the shoulders is a curious hump. Some of the carts look like low cars, while others are a little like omnibuses. They have but two wheels. Just such vehicles as these have been used in India for hundreds of years. Often we can hear these carts before we can see them, for the wheels creak in a most distressing way.

In the forests of India are many fierce tigers. The animals are often hunted on elephant-back, for the hunters are so far from the ground that they are safe.

Elephants are used in the lumber yards in India and



Siam to drag and pile up logs and timbers. In this work they show great intelligence.

Domestic elephants are usually fed rice; about twenty-five pounds is the daily allowance of each animal. The rice is cooked and made into balls, which are placed on a mat. The elephants gather around and are fed by their keepers. All food and drink is first taken into the trunk and then placed in the mouth.

Elephants are very fond of the water and enjoy bathing and swimming. When no streams are at hand, they will fill their trunks with water obtained from springs or wells and then throw it all over their bodies.

Where could one see wild elephants?

Of what use are elephants to man?

Step to the blackboard and show what is meant by *enclosing*.

What is a jungle?

How many years are there in a century?

How do the riders mount the elephants?

What is a turban?

Read aloud a sentence that tells you that the people in the Ganges valley live close together.

What is sediment?

How do you know that elephants are intelligent?

How do elephants wash themselves?

## TRAVEL IN ESKIMOLAND

It is winter where little Shug-la-wi'na lives. Indeed, winter lasts most of the year there, for it is in the northland. As far in all directions as Shug-la-wi'na can see there is nothing but snow. Not a tree lifts its bare branches in the wintry air, for no trees grow in that land. Even in the summer there are no fields of grain, no gardens, no flocks or herds to be seen. But the short summers are warm enough for the grass to grow and there are many flowers. During the long, long winter the days are very short. The sun remains above the horizon but a few hours at a time.

The very house in which Shug-la-wi'na lives is made of snow. It is low and round. A passageway, also built of blocks of snow, forms the entrance to the house. This passageway is several feet long, and the inner entrance is so low that Shug-la-wi'na and the other members of the family crawl in and out of the house. This passage prevents the bitter wind from entering the hut. The door is formed by a great skin which hangs over the inner opening.

Within this snug snow house are our Eskimo friends. There is the father, mother, Shug-la-wi'na, and We'we, a little sister four years old. They are all dressed in furs, for, as you know, it is very cold there. The seal and reindeer furnish them with most of the material for their clothing. Within the house one suit is sufficient, but when out of doors two suits are needed.

And now Shug-la-wi'na's mother prepares the evening meal. Some oil is put into a hollowed-out stone, and a wick of moss is lighted. This is both stove and lamp. There are no gas stoves or electric lights in Eskimoland. The only wood is the driftwood that is picked up during the summer, and this is too precious to burn.—

A kettle of water is put over the fire, and into this some bits of frozen fish are dropped. When this is cooked it is eaten as a sort of soup. After this, pieces of frozen fish are eaten raw and the meal is over. Frequently during the evening the members of the family help themselves to bits of the fish which they seem to relish. The fat obtained from the seal and walrus is also a common article of food, and the drinking of oil is enjoyed.

Very early next morning Shug-la-wi'na's father wakes them up. There is little food in the house, and he is going on a seal hunt. Stepping into the passageway, he chops up some fish for his dogs, and their breakfast is quickly eaten. Then he harnesses the dogs to a sled or *sledge* (a *ka-mu'tee* he calls it) and goes in and eats his own breakfast.

The sledge is the only means of travel in the winter. It is made of pieces of driftwood fastened together by means of thongs. No nails are used. The sledges are of two kinds. Some have a kind of railing along each side. This makes it easy to pack on a load consisting of many articles. Other sledges are flat on top. These are used when large animals like the seal or reindeer are to be transported.

You know that sleighs in our country have their

wooden runners shod with irons so that they will slip easily on the snow. Many of the Eskimos have obtained from the white men iron which they use for this purpose. Some use strips of whalebone, and others ivory; and some runners are made of ice.

To the back of the sledge some deer horns are fastened. These help to hold things on, and in addition



*Courtesy Revillon Frères*

### **The Runners on This Sled Are Made of Ice**

the harpoon, snow knife, or other implements can be fastened to them. They also act as a sort of brake, for when the empty sledge is turned upside down by the team, the horns stick into the snow and prevent the dogs from running away with it.

In all Eskimoland there is not a horse, and so dogs,

or *mi'kies* as they are called, take their places. They are nearly as large as the average Newfoundland dogs. Brindle seems to be the most common color. Sometimes there are as many as six or seven in a team.

You may be sure that Shug-la-wi'na's father did not find it easy to train his dogs to work. At first they



**Dogs Harnessed to Sleds Carry Heavy Loads over the Snow and Ice in Arctic Lands**

quarreled a great deal, but finally they came to know their places, and to obey fairly well. One dog always acts as the leader. He is the most intelligent, and is feared by all the other dogs in the team. When food is plentiful, the dogs are fed every second day; but when it is scarce, they are sometimes fed but once in five or six days.

The harness is made of seal or walrus hide and is called *a-no*. Usually the dogs are hitched tandem. They are placed far enough apart to prevent them from biting each other when they are traveling.

Now our friend is ready to start. He shouts to his dogs, cracks his whip, and soon they are speeding over the snow, for there is no load. His whip has a lash about eighteen feet long, made of sealskin. The handle is of bone, about eighteen inches long. If any dog fails to do his part or becomes quarrelsome, the lash is sure to reach him.

After traveling several miles, Shug-la-wi'na's father reaches the edge of the ice where he expects to catch some seals. The seals live under the ice during much of the winter, but occasionally they come to holes where they breathe. The sledge is turned upside down so that the dogs will not run away with it, and taking the harpoon in his hand our hunter walks quietly toward a breathing hole.

With his snow knife he very carefully scrapes away the snow from the hole to make sure that the seal still visits the place. Then marking the very center of the hole, he carefully puts back the snow and waits. As it is very cold and he may have to wait some time, he spreads a piece of deerskin on the snow and stands upon it.

For more than an hour he waits patiently for the seal. At last it comes. The hunter raises his harpoon above his head and very carefully takes aim. Now, rising on tiptoe, he plunges the spear through the hole and into the seal. A long cord of sealskin is attached to the harpoon to prevent the seal from escaping.



With the knife, the hole in the ice is made larger and the seal drawn out. Loading the seal on to the sledge, the team is started homeward. As there is now a load, the driver walks behind.

Shug-la-wi'-na's mother hears the crack of the whip and the barking of the dogs as the team approaches the hut, and she hurries out to see whether her husband has brought home any food. There is much rejoicing, you may be sure, when she sees the seal. Soon it is skinned, and the neighbors are invited in to supper.

After they have feasted to their satisfaction, they sing and tell stories, and pass a pleasant evening. In Eskimoland, when a man tells a story or entertains a company in any way, he turns his face to the wall. Is not that a curious custom? While the grown people are enjoying themselves, Shug-la-wi'na and We've sit on the bed of skins and play with their toys. Shug-la-wi'na is making a little sledge, while his sister plays with a doll. This doll has a body of wood, and its clothes are made of deer and bird skins.

Thus the long winter passes slowly away. The approach of spring is heralded by the fact that each day the sun shines for a longer time and with a little more power. As the snow melts, the water drips through the roof of the house, and it becomes a very uncomfortable place in which to live. The winter home is now exchanged for the summer residence. This is a tent made of walrus skins, and is called a *tu'pec*. In some parts of Eskimoland snow houses are not used. Instead the winter houses are built of stones, earth, sod, and wood.

The short summer is a very busy time. Much food must be obtained for the winter. As the streams and lakes thaw, salmon may be caught. Many birds have come to spend the summer in the northland, and Shug-la-wi'na collects eggs to be used as food. He



*Courtesy Revillon Frères*

### **Eskimos Covering a Kayak with Skins**

also gathers large quantities of moss, which he twists into rolls to serve as wicks for the stone lamps.

The sledge is no longer used in journeying from place to place. Instead our friends travel in light skin boats. These boats are of two kinds. There is a boat which carries but a single person. It is called a *kāy'āk* and is used by the men only. A much larger boat is called an *um'i-ak*.

Only the framework of these boats is of wood, for, as you remember, timber is very scarce. The kayak may be twenty feet in length and but two feet in width. Over the wooden frame is stretched the skin of the walrus, polar bear, or seal. Even the top of the boat is covered, with the exception of a circular opening just large enough to admit the body of a man.



*Courtesy Revillon Frères*

### **The Kayak Used by the Eskimo**

When Shug-la-wi'na's father gets ready to step into his kayak, he very carefully raises one foot and rubs the sand and gravel from his boot. He then does the same with the other boot. Now stepping into the boat he stretches out his legs and sits down. It takes great care to get in and out of the kayaks without

upsetting them. If the sand were not brushed from the boots, it might wear a hole in the bottom of the boat. Such boats vary in weight from twenty-five to one hundred pounds. The Eskimo can easily carry them from pond to pond. Some pieces of thong attached to the boat enable the owner to tie his har-



*Courtesy Revillon Frères*

**This Boat, Made of Skins, Is Used for the Entire Family**

poon or rifle to the top. The paddle is about seven feet long and has a double blade. It is held in the middle and worked with both hands. The Eskimo can make the kayak glide very swiftly over the icy waters.

The umiak is much larger than the kayak. It will

carry several persons and is used when the people are moving their camps from place to place, or going on a great hunting expedition. The women never use kayaks, but they often row the larger boats. Sometimes the umiak has a sail. An umiak twenty-five or thirty feet long will carry fifteen persons, beside much freight. No nails are used in making Eskimo boats.

You see how different Shug-la-wi'na's life is from yours. He does not gather fruits, nuts, or berries. In the winter he lives in a house of snow or of stones and sod, and in the summer in a tent of skins. His clothing is of skins and furs. The flesh of the deer, seal, bear, and fish, together with a few eggs in summer, are his food. He has never seen a train or a street car, a cab, an automobile, a motorcycle, or a bicycle, but travels on a sledge or in a skin boat. You would not want to change places with him, and he would not care to live as you do, for he is as happy in his home as you are in your comfortable home with all of its conveniences.

Why are there no trees where Shug-la-wi'na lives?

On the blackboard make a drawing of his snow house. Describe the house.

How is the cooking done? How is the food obtained?

Would you like to ride on an Eskimo sledge?

Why is it difficult to train the dogs?

Where was the seal before Shug-la-wi'na's father caught it?

How did the family know that the father was returning?

Describe We'we's doll.

Why is not the snow house used all of the year?

Do all Eskimo people live in snow houses?

How do the Eskimo people travel in the summer?

Show what is meant by hitching dogs tandem.



## RIDING BEHIND REINDEER

WHO has not heard of Santa Claus and his wonderful reindeer? How we wish that we could catch one glimpse of him wrapped up in his furs and driving his prancing steeds. Let us take a winter trip to Lapland, which lies east of the northern part of Sweden. Here we shall actually see reindeer harnessed to sleds and pulling them over the snow.

Lapland is a cold, bleak country where little grows. The Laplanders have been crowded farther and farther north, until now they live in a region where only the most hardy people could exist. During the long, cold winter the sun is below the horizon most of the time, just as it is in Eskimoland.

The summer dwellings of the Laplanders are made of the skins of the reindeer. The winter homes are made of wood and stones nearly covered with earth. This is necessary in order to keep out the cold.

If you were to enter one of these huts, you would be invited to sit down on a reindeer skin, for the people do not have chairs. Over a fire, reindeer meat is cooking in a large iron kettle. Hanging from a rafter is a cradle of deerskin made in the form of a shoe. In it is a tiny Lapp baby. The clothes of the different members of the family are in large part furnished by the reindeer.

In our country we reckon the wealth of a family



in money, stocks, bonds, and lands. The wealth of the Lapps is reckoned in reindeer. Some very rich families own as many as one thousand, while some poor families own only a few.

Reindeer are from four to five feet high. They are brown above and lighter in color below. Their color is darker in summer than in winter. The horns or antlers are branched. When the feet are placed on the ground the toes spread apart, making the hoofs wider. On this account the animals do not sink into the snow as much as they otherwise would. The chief food of the reindeer is a light-colored moss. This the deer will find even in the winter by clearing away the snow with feet and nose. This same moss grows in Siberia and northern Alaska, and in each of these regions reindeer are very important. Considerable reindeer meat is shipped from Alaska to other parts of our country.

In addition to furnishing food and material for the making of tents and clothing, the reindeer supply their owners with milk. Each cow gives a very small quantity, but the milk is rich. Generally the girls and women do the milking, while the men hold the animals by means of a short rope or strap. From the milk the women make cheese.

The Laplanders travel from place to place in order to find pasturage for their herds. On these trips the household goods are carried by the reindeer and the people themselves ride. The loads are not placed on the backs of the animals, for their backs seem to be weak, but rather at the base of the neck.

When snow and ice cover the ground the Laplander

travels in his sled, or *pulka*. This is long, low, and narrow, and looks a little like a boat. It is pointed at the front end. The Laplander sits in his sled as you might sit on the floor with your feet straight before you. Then he wraps his robe of reindeer skin about him and is ready for his drive.



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### **Finnish Peasants Travel to Town in Sleighs Drawn by Reindeer**

Of course only a few of the reindeer are trained to draw sleds. Those that are to be used in this way are generally selected when they are fawns. They are petted by all of the members of the family and become quite tame.

The harness used is very simple. A great collar is fastened about the neck of the animal. Around the

body there is a band or girth. A single tug or trace is fastened to these below the reindeer's body and also fastened to the front end of the sleigh. When the animal travels, the trace is between its legs.

I suppose that you have pictured Santa Claus driving with two reins just as we do. The Laplander uses but one. Stranger still, this one rein is not attached to a bit, but to the base of the reindeer's horns. This single rein the driver holds twisted about his right hand. He guides the reindeer by jerking at the rein and talking.

Reindeer cannot draw a very heavy load. With one passenger and a little baggage they will skim over the snow at the rate of about ten miles an hour. How strange it would seem to live in a land where there are no trains, no street cars, no carriages, and no automobiles. In making a trip in the summer you would have to walk or ride on a reindeer. In the winter you could use snow shoes or ride in a sled. I am sure that the last way would suit you best.

What is meant by *hardy* people?

When is the sun below the horizon where you live?

Describe the home of a Laplander.

Why are reindeer important in Siberia and Alaska?

When do the people begin to train the reindeer?

Tell how the animals are driven.

Name all of the ways in which the reindeer are useful to man.

## TRAVELING ON THE ICE

ON the east coast of the North Sea there is one of the most interesting countries in the world. It is the land of canals, of windmills, of dikes, of storks, of wooden shoes, and of skates. The western part of this curious little country was made by the sand and mud brought down by the Rhine, the Meuse, and the Scheldt, and deposited on the floor of the sea.

The brave people who inhabit this land have for hundreds of years fought the ocean in order to keep it from swallowing up their country. Not only have they conquered the sea, but they have taken land from it and changed it into pastures and fertile farms.

I am sure that you have already guessed that this country is Holland. It is often called The Netherlands, which means the low country. That is a good name, for much of the land is actually below the level of the sea. Holland is a small country, being about only the size of the state of Maryland, but it has a population several times as large.

Greitje and Hans are happy Holland children. Their home is close to one of the great walls or dikes that keep the sea from flooding the land. There are more than one thousand miles of these sea dikes. They must be watched very closely, for should a break occur it would rapidly increase in size, and soon farms and villages would be covered with water. The children

know well the story of little Peter, who long, long ago saved the country. Have you heard it?

Greitje's mother makes much butter and cheese, for in the pasture there is a herd of fine cows. Everything about the dairy is sweet and clean, and indeed the whole house is always kept tidy. When the children enter, they must leave their wooden shoes at the door. Some of the furniture would seem curious to us. The beds are like cupboards in the walls, and each has a curtain in front of it.

Extending in all directions across Holland are canals and ditches. Even the farm on which Greitje and her brother live is separated from the adjoining farms by ditches instead of fences. Everywhere along the canals curious windmills lift their arms against the sky. They stand like sentinels guarding the land, and indeed they do defend it better than soldiers could. Do you wonder what the windmills and the canals are for?

The green meadows and farms are in many cases the beds of old lakes and other areas once covered with water. Around these the thrifty Dutch people built dikes, and by means of the windmills pumped the water out. When the tide is low, the canals carry the water to the sea; and when it is high, strong gates prevent the sea from coming in. In this way much land has been added to Holland. The people hope to drain the Zuider Zee and pasture their sleek cows and raise crops on what is now its bed.

It is difficult to build roads in such a swampy country, and in the days when Holland had to fight human enemies as well as the sea she did not want roads. As the canals extend in all directions, they serve the pur-

pose of roads. You must not understand that there are no roads in Holland, but they are not so common as they are in some other countries. Some cities, such as Amsterdam and Rotterdam, have many canals.



*Photo by Elmendorf © Ewing Galloway*

**The Canals of Holland Are Important for Travel and Transportation**

Hans and Greitje like to watch the canal boats. They are very numerous, for much of the produce of the country is carried on them. They are nearly always painted some bright color, such as red or green. On the forward part of the boat, cheese, butter, eggs, and



vegetables are carried to market. In a cabin at the stern of the boat live the owner and his family. Sometimes members of the family may be seen walking on one of the banks of the canal pulling the boat.

It is said that there are about fifty thousand people in Holland who spend much of their lives traveling to and fro on these boats or barges. You remember that there are many people in China who live on boats. The Hollanders take much pride in making their floating homes as neat and attractive as possible. They often have potted plants in the windows and on the deck.

In the winter the canals are frozen, but they are even then important lines of travel. During the winter, in colder parts of our country, many people skate on ponds, lakes, and streams, but it is simply as a pastime. In Holland skating is the national sport, but it is also a regular means of traveling. Along the canals are guide posts pointing the way to various places. Wherever there may be danger on account of holes or thin ice, notices are posted, while the newspapers inform the people as to the condition of the ice on the different canals.

Dutch boys and girls do not have such skates as yours. They are made of wood with steel blades which curve high over the toes in curious style. The skates are fastened to the feet by means of straps.

The first real winter weather is hailed with delight by young and old. Both Greitje and Hans have skates and they are always anxious to get out on the ice. The small ditches freeze first, but after a while the canals can be safely used.

As soon as the ice is firm and strong, the canals are very busy places. The children skate to and from school. Physicians skate to visit patients. Men go to their work on skates. Boys taking orders for shops and stores glide up and down the ice streets as they call at the homes of their customers. Goods are delivered on



© Keystone View Co.

### Winter Travel along a Canal in Holland

sleds pushed by skaters. Women and girls skim by like swallows, carrying on their heads baskets of eggs which they are taking to market. People make visits on skates, and everybody skates for pleasure.

And what pleasure it is! The keen frosty air and the splendid exercise make the cheeks red and the eyes

bright. The steel blades of the skates ring on the ice as the skaters glide and wheel sharply about, playing games and cutting all sorts of fancy figures. Everybody seems happy. Even Dutch grandmothers do not think that they are too old to enjoy the sport, and they seem almost as much at home on skates as in their wooden shoes.

In order to keep the snow from spoiling the skating, men are hired to sweep it from the ice. Each man has a certain section of a canal which he sweeps. These men are stationed along the canals much as policemen are along the streets in our cities. The skaters quite commonly give these men a small coin as they pass, for in addition to sweeping the ice they make known the dangerous places and give assistance when people break through the ice.

The bridges which span the canals are sometimes so low that skaters strike their heads against them when they stand erect or do not stoop low enough. Sometimes, also, the ice beneath the bridges is not strong, and this is a source of danger. At intervals along the canals booths are erected where refreshments are served.

Several centuries ago a battle was fought between the French and the Dutch. It was in the winter and some of the ships of the Hollanders were frozen in. The French came marching over the ice to capture these, when the Dutch on their swift skates rushed to meet them and drove them back. Probably this was the only battle ever fought by skaters. Let us hope that the brave people of Holland will not have to fight any more battles and that they may always be permitted

to ride on their canal boats and skate over their frozen canals in peace.

How did the Hollanders conquer the sea?

Draw a diagram showing how the dikes keep the sea from flooding parts of Holland.

What is a *dairy*?

Can you give any reason for wearing wooden shoes in Holland?

When are people thrifty?

Of what use are the windmills?

Why are there not more roads in Holland?

How do the boys and girls of Holland enjoy themselves in winter?

## THE "SHIP OF THE DESERT"

IF your home is in the country, you are familiar with green meadows where fragrant flowers bloom in the summer. Perhaps you have waded in the clear waters of some murmuring brook, shaded by the overhanging branches of beautiful trees. Flowers, bees, birds, squirrels, and rabbits are your friends, and they add much to your happiness.

If you live in the city, you have visited the parks. You have enjoyed the many beautiful flowers which grow there. You have watched the boats glide over the smooth waters of the little lakes. You have lain upon the soft green carpet which Mother Nature spreads beneath the trees, watching the fleecy clouds sailing across the blue sky like great ships on the ocean.

There are many children who live where they cannot enjoy such things. You have made the acquaintance of little Shug-la-wi'na and his sister We'we, who live in a land of snow and ice. There are other children living in very hot lands where little rain falls. These children do not have the pleasures which you enjoy. All about them stretches a sea of sand or barren hills. Birds and other animals are rarely seen. Water is so scarce that its sound is like sweet music. Such regions are called *deserts*.

Traveling on a desert is both difficult and dangerous. The springs and wells from which water is obtained are often many miles apart. Of course one cannot

travel on foot across so dry a country. In fact, it is impossible to use horses in some places, for the noble animals would die of thirst. Why are there no railroads in these regions? Because it would be almost impossible to build them, partly because of the shifting sand dunes which would bury the roads, and partly because there is so little water. Besides this there is little need of railroads there, for the population is very sparse.

For centuries the people of these desert lands have traveled on the backs of *camels*. In Persia, Arabia, on the Sahara, and on the Gobi Desert they are used to-day, carrying to the outside world such products as dates, silk, shawls, tea, and ostrich feathers. Locate on a map the countries mentioned.

You have probably seen camels at the circus, and remember something of their strange appearance. They are larger than horses and have long, hairy necks. There is a tuft of hair below the eyes also. Some camels have one hump on the back, while others have two. Each foot has two toes joined by a pad. The thick pads protect the feet from the burning sands and sharp stones of the desert, and also prevent the animal from sinking in the loose sands.

Let us mount a "ship of the desert," as the camel is often called, and journey out upon the Sahara. Upon the camel's back some blankets are placed, and upon these a saddle. He is then made to kneel upon the knees of the forelegs, and we mount. See how the knees are calloused, for the patient beast has knelt in this manner thousands of times. There are similar calloused places on the breast.



We find the motion of the animal to be very peculiar. It is a sort of swinging motion, for both legs on the same side of the body are lifted together. Fastened about the animal's neck are bells and other ornaments. We travel very rapidly, for our animal is called a *meharis*, meaning a swift camel. The slow animals are used as freight carriers, and average two and one half to three miles per hour.

Soon we pass a *caravan* slowly traveling in the opposite direction. A caravan is made up of many camels and their drivers. In this caravan there are two hundred camels all loaded with dates. A very few of the

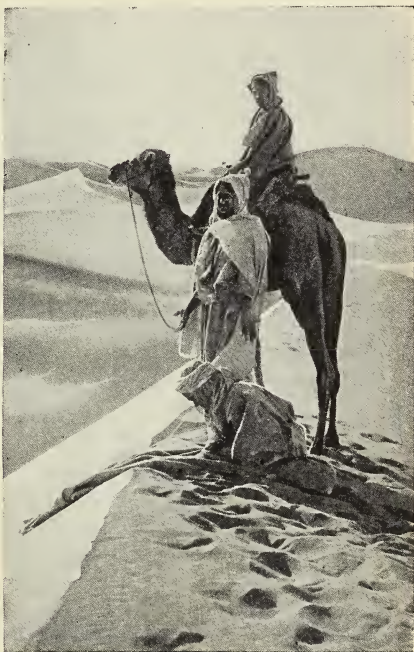


Photo by Ewing Galloway

### Traveling on the Sahara

These Arabs have paused for prayer.

animals are white. Some are gray, some brown, some black. The drivers are dressed in loose robes of white material. These robes are gathered at the waist by

means of a belt. On the head is a turban, and the cloth is so arranged that it can be made to cover the face in case of a sand storm. Sandals are worn instead of shoes.

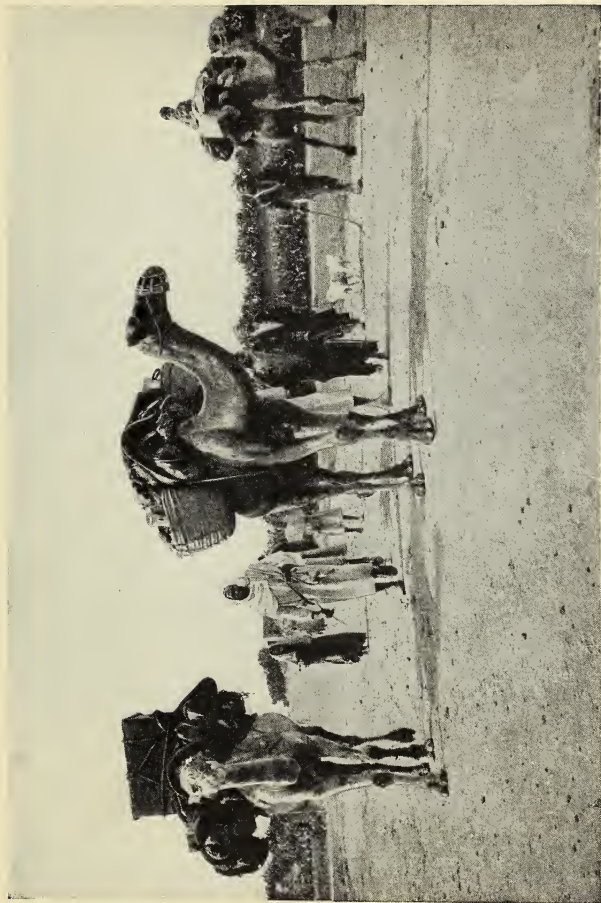
Hour after hour we journey over the terrible sands. No houses, no meadows, nor orchards, no fields of grain, and no water. At length we stop to eat and rest, for the noonday sun is powerful. The animals are fed a few dates, but they are not watered, for there is little water on hand, and it is several days' journey to the nearest spring.

The lining of the stomach of the camel contains many cells, and when the creature drinks, these absorb considerable water. It is these cells which enable the camel to go ten days or even more without drinking. You see why the camel is used in traveling on deserts.

Camels are very different from horses. They are not so intelligent, and they are not affectionate. They do not like to be petted, and in fact are sometimes rather ill-tempered.

Just before sunset we pitch our tents in a cheerless place. There are no trees, no grass, and no water. Although the day was so hot, the night is quite cold, and we are glad to have a thick blanket over us when we lie down to sleep.

Day after day our journey is much the same. In places the surface of the desert is quite level, but in other places there are rocks and hills. Some of the hills are composed of sand which has been drifted by the winds, as snow is drifted on our prairies. Such hills are called *dunes*. The side toward the wind is steep, while the opposite side has a more gentle slope.



*Photo by Brown Bros.*

**The Freight Car of the Desert**

Sometimes the drifting sand covers men and animals alike.

Our supply of water is carried in leather bottles. Of course the water is rather warm during the day, but we are very thankful to have enough to drink. The air dances and quivers above the sand as does the air over a bonfire.

And now the sky which has been so clear for several days takes on a brassy appearance. In the distance we see a dark cloud. We urge on our camels, but the cloud grows and approaches rapidly. The wind begins to blow, and the air is filled with fine sand. We know that one of the dreaded sand storms is upon us, and we dismount quickly.

The patient camels stretch themselves out upon the sand, and we hasten to pitch the tent. Even when inside, fine sand almost blinds and chokes us. We can hear the camels groaning as the wind hurls the sand grains against them. After a few hours the worst of the storm has passed and we mount our camels and ride on.

Toward evening of the next day we see in the distance some dark objects. A little later we realize that we are approaching trees. Our camels quicken their pace, for their keen eyes saw the welcome sight before ours did, and well they know that there is water to be found in the shade of these trees.

The grove that we are approaching consists of beautiful date palms. Their straight trunks, which rise for many feet without a limb, are crowned by long, graceful, feathery branches, bearing bunches of delicious dates. In this grove are white, flat-roofed dwellings

made of mud in which the owners of the palm trees live. Sparkling water flows from a spring, gladdening the heart of man and beast. This fertile spot is called an *oasis*. There are many such places on the desert.



*Photo by Elmendorf © Ewing Galloway*

**An Oasis in the Desert Gives the Traveler Water and Relief from the Hot Sun**

We dismount from our camels and lead them to the spring. How they enjoy the cool water, for they have not had a drink for days! While they are storing up water in the cells of which you have read, we fill our leather bottles, and so men and beasts are once more



prepared for another long journey. The tall, dark-skinned dwellers of the oasis greet us kindly and offer us food. We should be glad to rest beside the spring in the shade of the date-palm trees; but we still have many miles to travel, so after a few hours' rest we press on.

This oasis is like an island set in the midst of the ocean. How beautiful and restful it is after spending many days upon the dreary sands! The children who live upon this island never go beyond its shores. Here under the life-giving palms they play and watch with great interest the "ships of the desert" as they approach from time to time, or slowly disappear beyond the sandy billows of the desert, carrying to the outside world their burden of dates.

Describe a meadow.

Name a fragrant flower.

Describe a camel.

Of what use are the pads on the feet of the camel?

Would you like to ride on a camel?

What is a caravan?

Why is traveling across a desert unpleasant?

Why are camels better than horses for long desert trips?

If you were caught in a sand storm on a desert, what would you do?

Why are desert travelers glad to see an oasis?



## AUTOMOBILES

How often when you are crossing a street you hear the sound of a horn! As you look up you see an automobile dash along. Perhaps it is carrying a business man down town to his office. It may be that a physician is making a call. The persons riding in the car may be going to do some shopping, or perhaps they are taking a "spin" for pleasure. Automobiles are now very numerous on country roads as well as city streets.

Although automobiles have not been used extensively for many years, they were first made very long ago. Five years before the Revolutionary War broke out in America a Frenchman named Nicholas Joseph Cugnot made and operated a steam wagon. It is said that this very machine is now on exhibition in the city of Paris. Would you not like to see it? It was of course very different from the automobiles in use to-day.

Ten years later another Frenchman constructed and ran a similar machine in the city of Amiens. The terrible French Revolution which began in 1789 took the thoughts of people away from such things as automobiles, and little was done with them for some time.

Soon inventors in Great Britain took up the problem. You remember that Richard Trevithick was the inventor of the locomotive. Before making his first locomotive he built what he called a steam motor. In this he made a trip of ninety miles in the southern part of England.

Men who owned omnibuses or coaches were much opposed to the use of steam wagons, for they feared that their business would be ruined. In 1829 four men were stoned while riding in an automobile, and two of the party were severely injured. Six years later than this an automobile was operated before a special commission of the House of Commons. The machine was a great success, traveling at the rate of thirty-five miles an hour. The commission made a very favorable report on the use of such machines.

From this time steam coaches rapidly grew in favor, and they were regularly employed in carrying passengers between London and near-by cities. There was another great obstacle to the progress of the steam coach, however. About this time there was great interest in railroad building. Of course the railroad companies did not want to see steam coaches carrying passengers, and so reports were circulated declaring the steam wagons to be dangerous. In some cases, people went so far as to place heaps of stones in the roads so as to make it difficult to run automobiles. At last Parliament passed a law which said that a man on foot, carrying a red flag, must go ahead of every automobile to warn people of its approach. This law made the steam coaches useless, and so for some time little interest was taken in them.

One day, late in the summer of 1855, three American inventors were talking about automobiles, which at that time had never been seen in our country. The men felt sure that they could make such machines, and each finally agreed to build one. They went to work, and in due time the automobiles were finished. Two

of them were failures; but the third, which was made by Richard Dudgeon, was a success. The inventor ran his machine through the streets of New York City, and its appearance always drew a crowd. It was placed on exhibition in the Crystal Palace, where it was destroyed by fire.

Mr. Dudgeon was not discouraged, however, and in 1860 he made a second machine which was just like the first one. What a clumsy-looking thing it was! A bench extended along each side of the car, and upon these the passengers, ten in number, were seated. Under the benches were water tanks from which the boiler was supplied. Fuel, also, was carried. You observe that the machine had a smokestack something like that on a locomotive. The wheels were of solid cedar wood.

In 1866 two brothers, James and Henry House, made an automobile in Bridgeport, Connecticut. Their machine carried five passengers in addition to the driver and fireman. All of these early automobiles were run by steam, while to-day gasoline and electric machines are seen everywhere.

Within recent years automobiles have come into general use in nearly all parts of the world. The United States ranks first in the number manufactured and used. In both country and city the automobile and autotruck are rapidly taking the place of the horse.

In cities autotrucks deliver coal, lumber, machinery, ice, meat, baggage, and other things. Trucks are used on farms and ranches and in hauling the produce of the farms to market. Before the days of the automobile, there were in the large cities great numbers of cabs and

omnibuses drawn by horses. Now taxis and autobuses do the work.

In some parts of our country auto stages make regular trips between cities many miles apart. Some of



*Photo by Ewing Galloway*

### **Hauling Goods to the Dock by Motor Truck**

these stages accommodate a large number of passengers besides considerable baggage.

People now take long pleasure trips in automobiles. Every year a large number of these vehicles are driven across our continent, and they are extensively used in other parts of the world. Each summer our national

parks are visited by many people traveling in this way. There is so much touring by automobile that camp grounds have been established by many cities.

Although the automobile is of great value and affords pleasure to a large number of people, its use leads to



*Photo by De Cou © Ewing Galloway*

### **Many People Visit by Automobile Sections That Cannot Be Reached by Train**

many accidents. Some of the accidents are due to the carelessness of the drivers and others are the fault of people who are walking.

In walking on roads and streets we should always use great care. "Safety first" is an excellent motto.

Cross city streets at regular crossings only and always follow the directions of the traffic officer. If there is no officer, observe closely before crossing. It is very dangerous to run across a street suddenly. If you will do your part there will be fewer accidents.

When and where were the first automobiles made?

Why did some people object to the automobiles?

How were the first automobiles operated?

Name the uses to which automobiles and autotrucks are now put.

What is the fuel used in these machines to-day?

How may we help to decrease accidents?



## BICYCLES

THE first bicycles were made in France in 1816. They were quite different from the bicycles with which you are familiar, for they had no pedals. How do you suppose people traveled on such wheels? The rider sat in his saddle and pushed himself along by touching his feet to the ground. A machine of this kind found its way into New York City in 1819. It was called by some the "hobby horse."

In 1855 a French locksmith attached pedals to a bicycle. People at once saw that this was a great improvement and the machines became popular. Years ago bicycles were made with the front wheel about three times as high as the rear wheel. In some cases the front wheel was as much as sixty inches in diameter. They were made in this way because it was believed that the high wheel was necessary in order to secure great speed. A fall from such a bicycle was often a very serious matter, and so what was called the *safety* began to be manufactured. It would look very odd to-day to see a person riding on one of the high wheels.

About the year 1870 hard rubber tires were first used on bicycles. With these, riding was very much easier than it had been before, but when about twenty years later the pneumatic tires came into use, the pleasure in riding was increased still more. The wheels of those

days weighed from sixty to seventy pounds. To-day the ordinary wheel weighs only about thirty-five or forty pounds.



*Photo by Ewing Galloway*

### **Traveling by Bicycle in Bermuda**

The bicycle is a necessity in Bermuda, because the only other means of reaching places on the islands is with horses and carriages. Why?

For a number of years bicycles were quite expensive. As they became cheaper and as the weight decreased, great numbers were used. When several persons wish to take a trip together an automobile is more satisfac-

tory than are bicycles. In the automobile people can talk and travel rapidly and comfortably. This is one reason why bicycles are not used to-day by as many people as used them formerly.

In addition to bicycles, we now see many motorcycles in use. These were first made in France about 1895,



© Ewing Galloway

### **Motorcycles with Side Cars Are Used for Short Trips**

although a steam tricycle was made in that country as early as 1884. The use of motorcycles has increased wonderfully during the last few years. Machines of three horsepower, weighing less than one hundred pounds, are now in use. With one of these one can travel uphill and downhill at a rapid rate. People now

use motorcycles as well as automobiles across lofty mountain ranges.

Many motorcycles have two seats. This adds much to their value when people wish to use them for pleasure. By means of an extra wheel at one side little cars are attached to some motorcycles. Such a machine can easily accommodate a man, wife, and small child. Those riding in the car can be protected against the wind by means of a wind shield.

Think of the many ways in which wheels are now used. Men and women ride them in going to and from their work. Messenger boys use them in delivering telegrams. Children ride them to school. In going on pleasure trips they are often used by people where formerly the horse was employed. People visiting in foreign lands frequently ride their wheels from city to city and even from country to country. This makes it possible to stop whenever and wherever the traveler wishes. It is also less expensive than traveling in other ways.

Where were the first bicycles made?

How long have bicycles been in use?

How were the first bicycles operated?

How did the addition of pedals improve bicycles?

Why is riding on a bicycle more comfortable to-day than it was long ago?

What advantage has the motorcycle over the bicycle?

Explain what is meant by a pneumatic tire.

## TRAVELING ON THE WATER

MAN'S natural home is upon the land, and for a long, long time oceans, lakes, and even great rivers, like the Mississippi and Amazon, hindered his travels. How he learned to make his first boat no one knows, for that was a very long time ago. It was probably nothing but a log on which he sat and paddled himself across some pond or stream.

☉ In time people discovered that several logs could be bound together, thus forming a much better means of conveyance, called a *raft*. Rafts will not tip over and they will carry large loads. 🟦 They move very slowly, however, for they must be pushed by means of poles, or allowed to drift with the current.

Many years ago men living along the Ohio River used to build rafts which they loaded with the produce of the country,—corn, tobacco, flour, salt pork, and rope. The rafts were then floated down to the Mississippi. Some of them went on as far as the city of New Orleans, where the produce was sold. Others stopped at nearer ports. The owners of the rafts or barges would also sell the lumber of which they were made and then go home and prepare for another trip. When Abraham Lincoln was nineteen years of age, he went to New Orleans in charge of a raft.

! At the present time great lumber rafts are towed behind ships on the Columbia River and on Puget Sound. Vessels are more frequently used, however.





*From an old print*

**Log Rafts Were Built for River Use before Boats Were Made**



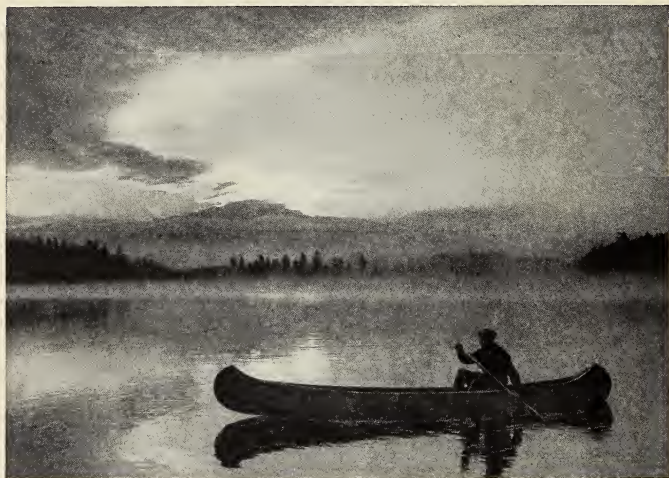
Such rafts are made up of a great number of logs bound together by chains. When the rafts reach their destination, the logs are sawed into boards.

Very clumsy boats are made by hollowing out logs. With such tools as carpenters have to-day this would not be a very difficult task; but when people had only stone knives and axes it was not an easy matter. Sometimes most of the work was done by means of hot stones. With these the centers of the logs were burned out, and the inside of the boat was then smoothed somewhat with the clumsy tools of which I have spoken. Such a boat as I have described is called a *dugout*. Why?

Dugouts were used by the Indians in some parts of our country, and by the early white settlers as well, for without sawmills it was difficult to make boards, and so, of course, the people could not have boats of the ordinary kind. In some parts of South America and Africa the natives use dugouts to-day. They are often as much as twenty-five feet long, and from two to three feet in width. Large as they are, each boat is made of a single log. Such boats will carry several passengers. The people move the boats by means of paddles or poles.

White men, as well as Indians, when traveling in the forest, sometimes wish to go across the country from one stream to another and carry their boats with them. A dugout is so heavy that it would take many men to carry it. Some of the North American Indians have for a long time used beautiful light *canoes* made of the bark of the birch tree. Such boats are so light that they can easily be carried from place to place.

Of course the canoes are not made entirely of bark. The frame is made of the limbs of the cedar tree, which the Indian bends into the proper shape. Large pieces of birch-bark are sewed together, and with these the frame is covered. In order to make the canoe perfectly water-tight, the seams between the sheets of bark are



© Ewing Galloway

### **An Early Start on a Lake in the Adirondack Mountains**

covered with a gum obtained from the fir tree. Have you read how Hiawatha made his birch-bark canoe?

On the lakes in the pine forests of northern Wisconsin I have seen Indians, kneeling in their birch-bark canoes, paddle swiftly and silently from shore to shore. Instead of oars the Indians use short paddles which are

dipped now on one side, now on the other side, of the canoe.

Very strange boats are used at Bagdad on the Tigris River. They are perfectly round and look a little like great bowls. What do you suppose they are made of? They are built of reeds and are then covered with a layer of asphalt to keep out the water. The boatman moves and guides his boat by means of a broad paddle. Just such boats as these have been used in that part of the world for three thousand years.

People who engage very little in commerce must make their boats of such material as they have at hand, and know how to use. The Indians who live on the shores of Lake Titicaca make grass boats called *balsas*. The grass of which the balsas are made grows on the shores of the lake. Lake Titicaca is one of the most lofty lakes in the world and is situated partly in Peru and partly in Bolivia.

The boats are light, long, narrow, and pointed at each end. Sometimes the points rise two feet above the rest of the boat. Some of the balsas carry but one person and some are fitted with a mast and sail and will accommodate eight or ten passengers.

A very remarkable boat is used in the Philippine Islands. The body of the boat is simply a great log cut or burned out on which is placed a frame of bamboo. Near each end of the boat is a crosspiece of bamboo several feet in length. On one side of the boat, and extending parallel to it, is a long piece of bamboo fastened to the crosspieces. This frame is called an *outrigger*.

You know that some plants have hollow sections in

their stalks. Bamboo grows in the same way. As these hollow sections are filled with air, it makes it possible for the boats to float a great weight. It is almost impossible to capsize such boats, and besides they are very fleet. The large ones have sails.



© Ewing Galloway

### Outriggers on a Canoe Make It Impossible to Capsize

Do you know that there are boats made of cloth? Cloth boats are often used by hunters and fishermen who want a boat light enough to be easily carried. Some of the boats of this kind are sixteen or seventeen feet long, yet they are so light that a man can carry them. The frame is made of strips of very light

wood and over these canvas is stretched. A very interesting thing about canvas boats is that they can be folded up and thus are easily carried.



*From an old print*

### Early Travel on the Erie Canal

Many years ago boats drawn by horses or mules were used a great deal. Such boats are called *canal boats*, because they are used on canals. When animals draw the boats they walk on a path called a *towpath*, which is on one bank of the canal. A long rope with



one end fastened to the front of the boat and the other to the animals enables them to draw or tow it. Sometimes tugs pull the canal boats.

James A. Garfield and Grover Cleveland, when boys, drove horses on a towpath. What great office did each of these men fill?

Because canal boats are flat bottomed, they can be used in quite shallow water. Some of the things that are carried on such boats are grain, potatoes, coal, and stone. They are not now used for carrying passengers. The Erie Canal, which extends from Buffalo to Albany, New York, was quite important. Locate it. Why does it not connect Lake Ontario with the Hudson River? In time a deeper waterway was needed and the Barge Canal was constructed. For a part of the distance the Erie Canal was enlarged, but for the remainder an entirely new canal was dug. The eastern end of the Barge Canal is at Troy. Owing to the rapid growth of railroads in our country, canals are not used as much as they once were.

A boat that is moved by hand is, of course, small. Long voyages cannot be taken on such boats, for it is impossible to carry a sufficient supply of water and provisions. Besides, the time required to make a long journey in one of these boats is too great; there is no chance for the passengers to rest, and a storm would be almost certain to capsize the craft.

When people discovered how to use sails on boats, they built larger vessels and made longer voyages. Columbus made all of his voyages to America in sailing vessels. His ships, which were considered large in his time, would appear very small and clumsy to-day.



Columbus was seventy days in making his first trip to the New World. Now the journey can be made in less than a week.

You find your way about a city by means of the names of the streets and the numbers on the buildings.



© Ewing Galloway

### Freight Barges on the New York Barge (Erie) Canal

If you are traveling in the country, you see signboards put up by automobile clubs or you inquire as to roads and landmarks. On the ocean there is nothing of this sort to guide the traveler. There is just the endless expanse of blue water below and blue sky above. Of

course the sun and the stars help the sailors to some extent, but these are not enough, and sometimes they are hidden.

The sailor keeps his way upon the sea by means of a wonderful invention called the *mariner's compass*.



© Ewing Galloway

A Square Rigger, Built in 1883, Still in Use

This is a circular box; around the edge of the inside are letters indicating the directions or *points of the compass*. A needle fastened in the middle swings within the box, and one end of this needle always points nearly to the north. Knowing where north is, it is easy to find the other directions. The box has a glass face like that of a clock.

This wonderful instrument is said

to have been invented by the Chinese. Before the days of the compass, sailors would seldom venture beyond sight of land, for if they did there was danger that they would never again reach the shore. Without the compass sailors would not care to cross the ocean to-day.

It is a beautiful sight to see a large ship with all of its

sails spread flying before the wind. How like a great white bird it seems as it skims over the waves! The sailors who manage the ship need to be both brave and strong, for sometimes there are mighty storms upon the sea. Then the sky becomes dark, lightning flashes from the angry clouds, and the roll of thunder seems like the sound of giant cannon. The white-crested waves leap higher into the air as they strike the ship which they seem to be trying to swallow. Now, with the vessel pitching and tossing, the sailors must climb their swaying rope ladders nearly to the tops of the tall masts and *reef* the sails.

But after the storm, there always comes the sunshine. Then the sky seems brighter, the air purer, the ocean bluer, and life sweeter than before. Storms are not all upon the ocean. There are human tempests as well as those of wind and rain, and we must each learn to battle with *our* storms and to conquer them.

What are rafts? For what are they used to-day?

How is a dugout made?

Why did the Indians like the birch-bark canoes?

Explain how Hiawatha obtained the bark from the birch tree.

What part of Hiawatha's canoe was furnished by the cedar tree?

How was the canoe made water-tight?

Describe the strange boats used on the Tigris River and on Lake Titicaca.

Why are not canal boats used for carrying passengers?

How does the compass help sailors?

## STEAMSHIPS

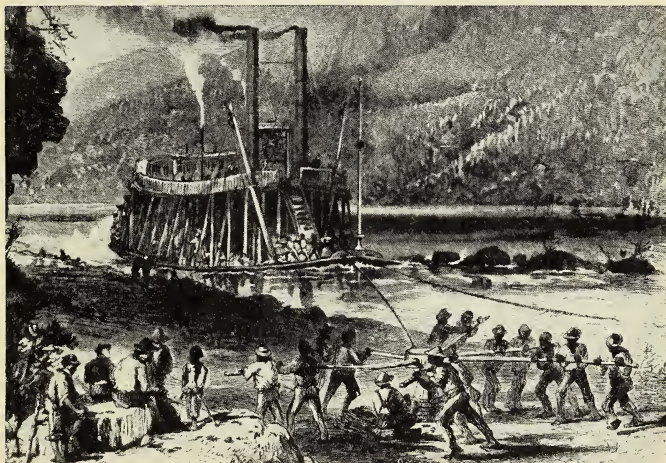
IN the year 1807, farmers living beside the Hudson River saw a wonderful sight. A boat went up the river without the use of oars or sails. Masses of smoke rose from it, and at night a cloud of fire seemed to hover over it. It is no wonder that the people were excited, for this was the first steamboat ever seen on the Hudson. It was named the *Clermont*, and it steamed up the river at the rate of five miles an hour. It reached Albany thirty-two hours after leaving New York City. Locate these two cities on a map.

The following is an extract from a letter which Mr. Fulton wrote to the editor of the *American Citizen* on his return to New York:—

“I left New York on Monday at one o'clock, and arrived at Clermont, the seat of Chancellor Livingston, at one o'clock on Tuesday—time, twenty-four hours; distance, one hundred and ten miles. On Wednesday, I departed from the Chancellor's at nine in the morning, and arrived at Albany at five in the afternoon—distance, forty miles; time, eight hours. The sum is one hundred and fifty miles in thirty-two hours, equal to near five miles an hour. On Thursday, at nine o'clock in the morning, I left Albany, and arrived at the Chancellor's at six in the evening; started from thence at seven, and arrived at New York at four in the afternoon, one hundred and fifty miles, equal to five miles

an hour. Throughout my whole way, both going and returning, the wind was ahead; no advantage could be derived from my sails: the whole has, therefore, been performed by the power of the steam engine."

Four years before Mr. Fulton made his first steamboat trip on the Hudson, he had gone from his home



*From an old print. Photo by Galloway*

### **An Old River Steamboat**

**Compare this with the river boats of to-day.**

in Pennsylvania to Europe to study painting and on the Seine River in France he launched a small steamboat. Napoleon, the Emperor of France, became interested in the matter, and it was arranged to have the steamboat make a trial trip on a certain day. Early on the morning of the appointed day news came to Mr.



Fulton that his boat had sunk during the night. This was, of course, a great disappointment, but the inventor determined to continue his work in his native land. Mr. Fulton was not the first man to apply steam to boats, but he was the first man to make a success of the undertaking.

Other steamboats were soon built, you may be sure. In 1812 Mr. Fulton built one at Pittsburgh. This boat steamed down the Ohio to the Mississippi, and then down the Mississippi to New Orleans. Trace its voyage on a map. In 1819 a boat called the *Savannah* went from the city of the same name to Liverpool. This voyage required twenty-two days.

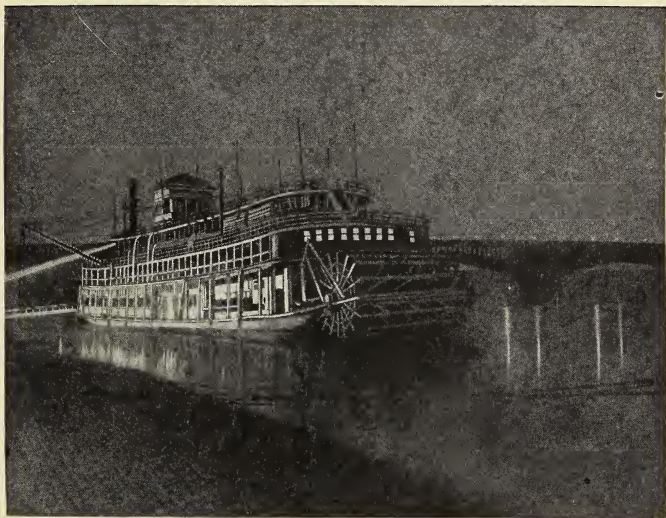
When the *Savannah* was approaching the City of Cork, Ireland, an amusing thing happened. Those who discovered the vessel approaching saw the smoke hanging over it, and supposing that it was on fire they sent two ships to rescue her passengers and crew. You can imagine the surprise of the people when they found that the boat was not on fire, but was being driven by steam.

Soon steamboats were in common use on the ocean, on our Great Lakes, and our rivers. The steamboat does not depend upon the wind, and it can make headway against the current of a stream, which a sailing vessel finds it difficult to do. In early times sailing vessels experienced considerable difficulty in ascending the Mississippi to New Orleans, the journey often requiring many days, although the return trip could be made in a few hours.

Of course a steamship, like a train, requires fuel to keep it going. The distance from New York to Liver-



pool is so great that vessels starting on this voyage must take an immense amount of coal or other fuel. Often crude oil is used as a fuel. In the early days the steamboats on the Mississippi used to burn wood.



**Evening on the Mississippi, with Passenger Packet in the Fore-ground**

During recent years steamboats have been wonderfully improved. To-day we can cross the Atlantic in less than a week and with little danger of accident. Some of the newer steamships are hundreds of feet long. A few are as long as a passenger train of eight or ten cars.

Let us stand on the wharf and see what an ocean

liner takes on board before starting for Europe. If coal is the fuel burned on this particular liner, thousands of tons of coal are placed in the bunkers, for more than one thousand tons of coal are used each day. Far down in the hold of the vessel are the men who handle the coal. They are called *stokers*. With hands and faces blackened by their work, these men feed the ever hungry furnaces night as well as day. Were it not for the work of the stokers we could not take this ocean trip. There are thousands of pounds of meat in addition to fish, poultry, eggs, and game. More than one hundred barrels of potatoes are taken on board. There are many barrels of flour, tubs of butter, cans of milk, and wagonloads of ice. This is not all, for in addition we see great quantities of vegetables, fresh fruits, and ice cream.

Do you wonder why so much is taken on board? I will tell you. The good ship is to carry more than three thousand passengers in addition to her crew of nearly one thousand. It takes a great deal of food to supply so many people for a week.

Let us imagine that we have gone on board the ship and are now comfortably located. As we have plenty of time at our disposal, we will explore our ocean home from end to end.

The vessel is built of steel and is very strong. Great smokestacks rise into the air, and a long line of smoke drifts lazily behind us as we rush forward. Near the forward end of the vessel is a part elevated above the rest. This is called the *captain's bridge*. Here the captain or the first officer is stationed all the time.

Just in front of the bridge and a little lower is a

small cabin in which the pilot stands. It is his duty day and night to guide the great ship over the trackless ocean. This he does by means of a wheel which he turns now this way and now that as he reads the compass before him. The wheel is connected with the rudd-



© Ewing Galloway

### **The Steamship *Majestic* Sailing Out of New York Harbor**

der at the stern of the vessel. Perhaps you have seen rudders on rowboats.

Around the edge of the boat is a walk or promenade several feet wide. A trip around the ship gives us considerable exercise. Here are chairs so that passengers may sit out of doors during pleasant weather. In the center of the ship are the cabins. The first cabin

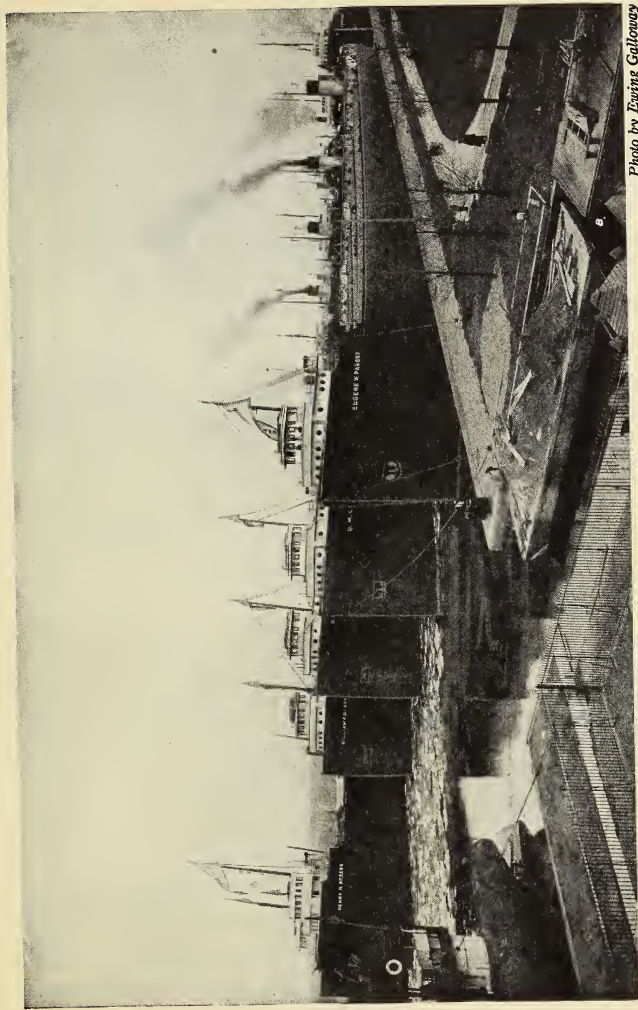
is fitted up like a palace. There are electric lights, electric bells, rich carpets, costly furniture, and beautiful pictures. There is a piano, a reading room, a writing room, a gymnasium, and a swimming pool. The dining room is beautifully furnished and seats several hundred people. An electric elevator and several broad stairways connect the different decks.

The accommodations in the second cabin are excellent also. Steerage passengers occupy the lower part of the vessel. Traveling steerage is much cheaper than traveling first or second class.

The ship has a large number of bedrooms called staterooms. In some of the rooms there are *berths* instead of beds. The berths are fastened firmly to the walls, for during storms the ship plunges and tosses about on the waves. In each room there is a washstand, mirror, glasses for water, hooks for clothing, electric light, and an electric button so that one may call the steward or stewardess if assistance is needed.

We have freight as well as passenger service on the water and it is very important. But for this, there could be no exchange of products between countries separated by the ocean. Great freight steamships carry to other lands some of the things which we have to sell and bring to us things which we do not produce.

There is much commerce on our Great Lakes. The states bordering on the lakes produce timber, iron, coal, copper, and grain. They have a large population and do much manufacturing. The chief articles shipped on the Great Lakes are iron ore, coal, copper, lumber, grain and flour. Some of the ships are several hundred



*Photo by Ewing Galloway*

## Great Lakes Freight Steamers Anchored at the Soo Canal



feet long and carry thousands of tons of iron ore or coal.

The oceans are no longer barriers to travel and transportation as they once were. It takes only a little longer to go from New York to Liverpool on an ocean liner than it does to cross our continent by rail. Even when out in mid-ocean we are not cut off from the rest of the world. By means of a wireless telegraph equipment which our ship carries, we can communicate with the shore and with other vessels carrying such equipment. How wonderful it is to be able to journey over the oceans in this way. This great ship, like a floating palace of a king, carrying its passengers with speed, comfort, and safety, is as wonderful as many of the things that we read about in our fairy tales.

Locate the river on which the first steamboat trip in the United States was made.

Why were the people who saw the ship excited?

How fast did it travel?

Who was the inventor of the ship?

What is the meaning of *appointed*?

What advantage has a steamship over a sailing vessel?

What are the fuels used on a steamship?

How many passengers do some of the great liners carry?

Can one get any news from land while on an ocean voyage?

How have steamships been improved?

Name things brought to the United States on freight ships.



## ON THE CANALS OF VENICE

You have all heard of "sunny Italy," but perhaps you do not know just where this country is. Look at a map of Europe and you will find projecting southward into the blue waters of the Mediterranean Sea a long, narrow peninsula, a little like a boot in shape. This is the peninsula of Italy. The word "Mediterranean" means *in the midst of the land*. Why was the sea given this name?

Italy is not a large country. In fact, it is much smaller than the single state of California, but it has several times as many people. That means that the Italians live much closer together than do people in California and most other states.

The children of Italy are familiar with many sights which most of you have never seen. In that country there are extensive vineyards, where, in the autumn, the rich clusters of grapes are gathered from their hiding places in the dark green foliage and made into wine. There are also orange and lemon groves with their golden and yellow fruit. On the marshy lands are fields of rice, for rice thrives best on wet lands. Many groves of chestnut trees are found on the mountain slopes. Chestnuts are quite important as a food in Italy. They are boiled, and roasted, and eaten in other ways.

Except in the mountains there is little cold weather

in Italy. Snow and ice are not common, and the children do not snowball or skate. Because of the mildness of the climate, many people go from the United States to Italy every winter.

The people who lived in Italy many hundreds of years ago were called *Romans*. Their chief city was Rome, and although it was built so long ago some of the old buildings are still standing. You would enjoy a visit to Rome, I am sure; but I want to take you to Venice, a city on the northeastern coast of Italy.

Venice means *come again*, and after you have seen the city, you will be anxious to visit it a second time. About two miles from the shore are a large number of low, flat islands, and upon these the city stands. Between these islands there are narrow bodies of water called *canals*. As you look at Venice from a distance its buildings seem to rise directly from the water, and in fact many of them do. The houses are built along these canals as houses in other cities are built along streets. Indeed, the canals *are* the streets in Venice, although there are a few real streets.

It would seem very strange to you to live in such a city. There are no street cars dashing along; few carriages and wagons rattling over pavements; little chance to run across the street to join a company of playmates. How do the people get from one part of the city to another? you ask. This is the interesting part of the story. They travel by means of boats. These boats take the place of cars, carriages, automobiles, and even wagons. They glide swiftly and silently along the canals, or they drift lazily as their passengers may feel inclined. Such boats are called *gondolas*. You may

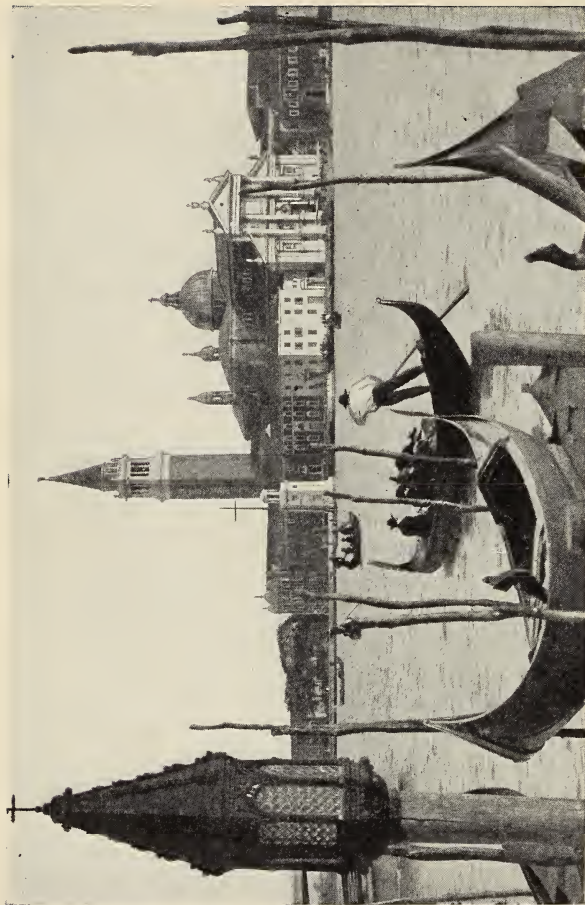
have seen one on the lake in the park. Many of the children in Venice have never seen a horse.

In every city in our country there are many people who own automobiles. In Venice very few families own their own gondolas, and so they must call one every time it is needed, as we would call a taxi.

Near every large hotel there are stands or places where gondolas gather when not in use. Such a place is called a *traghetto*. Here there are posts to which gondolas are fastened, much as horses are tied to posts in our cities. Let us walk from the steps of our hotel to the nearest *traghetto* and engage a boat. We find that one of the boatmen is foreman of the company, and he does not care to have one of their number engaged unless it is his turn to be employed. If, however, you are determined to have a certain boatman, the foreman will consent to your engaging him. No other boatmen in the city are expected to come to this *traghetto* for employment.

The boatmen are called *gondoliers*. They commonly wear white duck suits and white shoes. The blouse has a wide blue ribbon at the neck. About the gondolier's waist is a bright sash, and on his head he wears a wide straw hat to which ribbons are attached. Sometimes the gondolier is bareheaded and wears a handkerchief about his neck. There are other kinds of suits worn, especially in the winter, when the boatmen are likely to dress in dark-colored suits.

We select a gondolier and, stepping aboard, seat ourselves in the high-backed seats with their leather cushions. How easily we start! How silently we glide along the canal! No crowding for seats; no names of streets



© Ewing Galloway

### People Must Travel in Venice by Means of the Gondola

The man who stands at the back of the boat and rows is called the *gondolier*. He often sings a song while rowing his passengers.

being shouted; no asking for transfers; and no pulling of the bell cord.

And now let us examine our gondola. It is a long, narrow boat and black in color. Each end is pointed and rises from the water to a height of four or five feet. The front end of the boat is a little like the neck of a violin. In the center of the gondola there is a small cabin of black cloth. There are two seats with high, carved backs, and there is a strip of carpet on the floor. The gondolier does not sit to row the boat as boatmen do in this country. He stands up in the stern of the boat upon a little platform and handles a long oar, which is in an oarlock. The oar is pushed instead of pulled.

We are journeying along the Grand Canal. This is the chief canal or street in the city, and it winds through it like an S turned backward.

Lū-ī'gǐ, our gondolier, shows great skill in guiding our boat, for there are many gondolas on the canal, and an occasional steam launch. There are also mail boats instead of mail wagons, and boats piled high with fruits and vegetables. And now we observe that all of the gondolas are black. Luigi says that this has been required by law for several centuries. Each boat has its special number just as taxis have in our cities.

Here is a sign which reads, "Divieta di Nuota." This means that swimming is forbidden, but in many of the back streets the boys swim as much as they wish. There is a mother standing on her steps holding one end of a cord. And look! The other end is tied to a black-haired, black-eyed, dark-skinned boy not more

than six years old. He is learning to swim. What fun he is having!

We pass under many bridges as we glide along. There are about four hundred of them in the city. By means of these the people can pass from one street to another. Narrow lanes called *Calli* lead through many houses. The *Rialto*, the most beautiful of the bridges, was built more than three hundred years ago. It is in one span ninety-one feet long. It is as wide as an ordinary street, and is more than twenty feet above the water. Along the bridge there are two rows of shops where various things can be bought. Between these shops is a walk for passengers, and outside of each row of shops there is another walk.

Now we have reached St. Mark's Cathedral. The great square in front of the building is the home of thousands of pigeons. They are so tame that they light on our hands and shoulders when we scatter food for them.

We look at our watches and discover that it is six o'clock. They number the hours from one to twenty-four, which seems very strange to us. The gondolier turns his boat about and we start homeward, taking our way along some of the smaller canals. As we approach the *traghetto* at the hotel an old man comes forward, and as our boat touches the landing he holds it firmly by a short hook while we step out. We give him a few cents, for which he seems very grateful. These men are called *hookers*.

After dinner we go for another ride on the canals of this wonderful city. The moon is full and it bathes the buildings, the boats, and the canals in a flood of



silver light. The path over which our gondola has glided shimmers far behind us. The whole city seems like fairyland. Lights shine from the houses which rise directly from the water. Lanterns flash from the boats as they glide now this way and now that. As we look in to the water, all of these lights dance and twinkle there also.

Here comes a barge carrying twenty-five or thirty people. They are all singing or playing musical instruments. Luigi says that these young people work during the day and sing during the evening, so as to earn something in addition to their regular wages.

Many gondolas gather about as the music floats out on the air. We drift along, now in the bright moonlight, and now close to some tall house whose shadow makes the water look black and deep. And here, reclining upon our leather cushions, with the music coming to us from the barge, and from many open windows in the homes, and with the stars twinkling in the blue above and in the water below, we fall asleep, to dream of Venice, the city by the sea.

Locate Italy and Venice.

What is foliage?

Describe the climate in the lowlands of Italy.

How do the streets in Venice differ from the streets in our cities?

Are there any *real* streets in Venice?

How do people travel from one part of Venice to another?

Describe a gondola.

Tell why you would enjoy a ride in one of the boats.

What would interest you most on such a ride?

## TRAVELING THROUGH THE AIR

WHO has not envied the birds as he has watched them sailing lazily about far above the surface of the earth, or winging a rapid flight from place to place? How easily they seem to move! What glorious views we might obtain could we but rise above the earth as they do!

Man is not content with being able to travel over land and sea. For a long time he has tried to learn to travel through the air. By means of balloons and airplanes this is now possible, but travel in them is rather expensive.

One summer day, in the year 1783, two young Frenchmen in Paris made a small balloon. This was filled with hot air from some bits of wood burning on a tin plate beneath it. As the air filled the balloon it rose and floated, for the colder air was heavier than the warmer air and lifted it up. When the air in the balloon cooled, the balloon fell.

The floating of the balloon suggested that it might be made to carry something. One day the inventors attached a basket to a larger balloon and sent a chicken, a duck, and a sheep into the air. The animals reached the earth in safety after their strange ride, and they were probably the first living things to take a trip in a balloon. Later in the same year two men ventured to take a ride in a balloon. They sailed over a part of the great city of Paris and landed safely after having been in the air for about twenty minutes.

Since that time many balloons have been made and used, and some long journeys have been made. The balloons that carry men into the air are a little like the toy balloons that you have seen. They are, of course, very much larger and stronger. Sometimes



© Ewing Galloway

**A Passenger Balloon Ready to Leave the Ground**

the bag is made of stout cotton cloth covered with rubber, and sometimes it is made of silk which is varnished. Attached to the bag is a basket generally called a *car*. In the car the passengers ride. The bag is filled with *hydrogen* or *helium*. These gases are lighter than the air, and this causes the balloon to float.

When a balloon is filled with gas it tugs at the ropes

which hold it to the earth as though it were anxious to be free. It darts upward when it is liberated, and quickly carries its passengers far above the surface of the earth. If the balloonist wishes to descend, he opens a valve and allows some of the gas to escape. Throwing out bags of sand, called *ballast*, or any other weight, causes the balloon to rise.



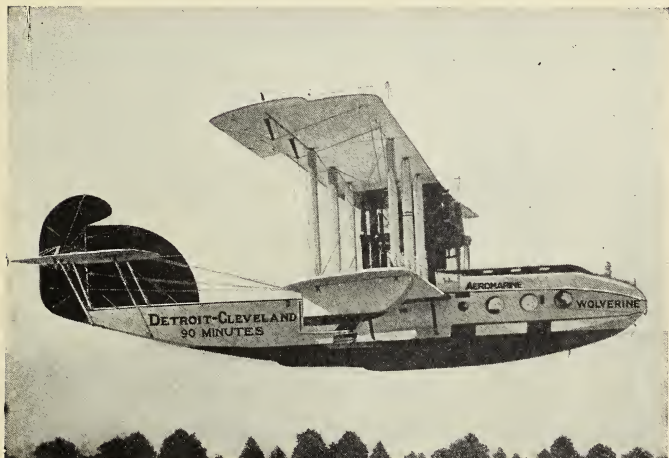
Photo by Brown Bros.

### Dirigibles Are Being Used for Passenger Travel

Carriages, automobiles, and even ships can be guided, but ordinary balloons cannot be. They are simply drifted by the wind. This is a great disadvantage, as travelers have to wait for a favorable wind.

There are now balloons that can be guided. They are called *dirigibles* and some of them are several

hundred feet long. Both passengers and freight are transported by these monsters of the air, which follow regular routes. Like the ordinary balloon, the dirigibles use hydrogen or helium. They therefore belong to the lighter-than-air class of airship.



*Courtesy Aeronautical Chamber of Commerce of America*

### **Regular Passenger Service Is Conducted through the Air between Detroit and Cleveland**

*Wolverine* is also the name of one of the fastest trains out of Detroit.

In 1836 three men made a night trip in a balloon from London to central Germany. What body of water did they cross? In October, 1900, two balloonists made a journey from Vincennes, France, far into Russia. They were traveling in the air for thirty-six hours, and it took longer than this to make the return journey by rail, so you see they traveled rapidly.

There is a yearly international contest among balloonists in which the United States always takes part. The 1922 contest started from Geneva, Switzerland. The prize was won by a Belgian who landed in Rumania, 852 miles from the starting point. He made the trip in a little less than thirteen hours.

Many years ago Santos-Dumont, a Brazilian, developed an entirely different kind of machine. In this he succeeded in flying around the famous Eiffel Tower, guiding his machine as he wished. Since that time great progress has been made and many long flights have been taken.

Great numbers of *airplanes*, as machines of this class are called, are now in use. There are different types, but they are all driven by motors as are automobiles. Airplanes are heavier-than-air machines.

Great numbers of airplanes were used in the World War. They are now used for pleasure and for carrying freight or passengers. For the carrying of passengers, airplanes are, at present, more extensively used in Europe than in the United States. There are established air routes over which the ships operate regularly. Some of the machines carry ten or more passengers. One of these routes is across the English Channel. Another connects France and Morocco. In the United States passenger service is maintained between Detroit, Michigan, and Cleveland, Ohio.

Airplanes are employed in the United States mail service. By airplane, mail can be transported between New York City and San Francisco in a little more than twenty-four hours. That part of the route between Chicago and Cheyenne is passed over during the night,



and is illuminated by powerful electric lights placed on towers fifty miles apart. Smaller lights are placed at short distances. This makes it easy for the pilots to follow the route.

You know that there are many forest fires in our country. Airplanes now travel back and forth over some of our forests during the summer. When a fire is observed its exact location is noted and the news is quickly sent to fire fighters.

Sometimes airplanes are used in searching for people who are lost. Excellent pictures are taken from airships and much of the geography of a region can be studied from them. Some people use airplanes simply for pleasure.

Airplanes cannot be parked anywhere along streets or in small yards as automobiles can. Special landing places are necessary. At



*Courtesy Aeronautical Chamber of Commerce of America*

### **A Transcontinental Mail Plane**

the present time these machines are more expensive than automobiles and it requires greater skill to operate them. In spite of these disadvantages airplanes are used much more extensively than they were a few years ago.



*Courtesy Aeronautical Chamber of Commerce of America*

**An All-Metal Mail Plane Which Carries about 45,000 Letters and  
Flies Both Day and Night**

Who made the first balloons?

Why does a balloon float in the air?

What is the car?

How are balloons caused to rise and fall?

Of what use are the large balloons that can be guided?

Tell how airplanes are used.

If you would like to ride in an airplane, tell why.

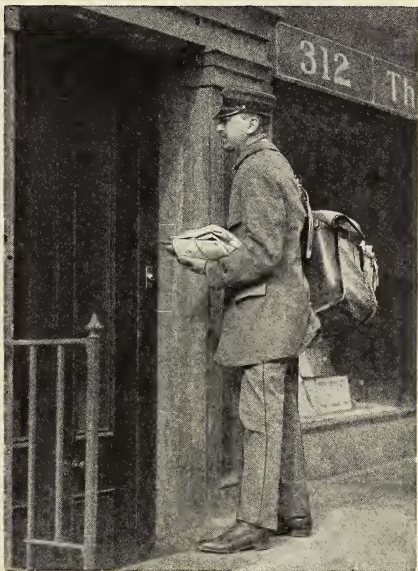
## HOW THE MAIL IS DELIVERED

"THERE is the postman's whistle," said Mrs. Cameron. Edith hurried to the door, for a letter was expected from Uncle Charles, who was in Alaska. Soon she scampered back into the room, waving an envelope in her hand. "Is it from Uncle Charles?" she asked as she handed the letter to her mother.

"Yes," replied Mrs. Cameron as she tore it open, "it is from your uncle."

Grandpa, Mr. Cameron, and Edith prepared to listen, for receiving a letter from Uncle

Charles was always a very interesting event. The letter was as follows:—



*Photo by Ewing Galloway*

**A Postman Delivering the Morning Mail**

FORT YUKON, ALASKA, July 4, 1923.

MY DEAR SISTER: Even in far-off Alaska this is a holiday, just as it is in Boston. Although Fort Yukon is a small place the people are very patriotic.

The town is on the Yukon River, several hundred miles from its mouth, and almost exactly on the Arctic Circle. The fort was established by an agent of the Hudson Bay Company a very long time ago.

Although we lack many things, we have *one* thing that Boston people do not have,—sunshine night and day; that is, at this time of the year. It would seem very strange to you to see the sun shining at midnight, but one can see this here on June 21. During the winter we see the sun but a short time each day.

Vegetation grows rapidly during the summer days, but the winter weather is bitterly cold. During December the average temperature is about twenty-five degrees below zero. At a depth of a few feet the ground is frozen all of the year.

This letter will leave here to-morrow morning on a little steamboat and go down the Yukon to the mouth of the Tanana and then up that river to the town of Nenana. From there it will be carried over the government railroad to Seward, on the south coast. A ship will carry it to Seattle, and the eastern mail will then be carried across the continent by rail.

About the middle of October the river will freeze and remain frozen until about the first of May. Probably you will not hear from me more than once or twice during that time, for our winter mail service is very poor. At that season the mail is carried between Nenana and Fort Yukon by stage or on sleds drawn

by dogs. A team often consists of six or seven dogs hitched tandem. There is always great excitement when the mail reaches Fort Yukon. We are not cut off from the rest of the world as much as we used to be, however, as we now have a wireless station.



**Mail Is Carried by Means of Dogs and Sleds in Remote Parts of the Yukon Valley**

I must tell you how the mail is delivered between Kotzebue and Point Barrow. Kotzebue is west of this place, on the coast, and Point Barrow is on the Arctic coast. A man has a contract with the United States government to carry the mail. This he does during the winter by means of reindeer. The route is about two hundred fifty miles long.

I expect to receive a letter from you by the next

boat that comes in. Tell Edith that I am looking for a letter from her also. With much love I am,

Your brother,

CHARLES

"I hope that you will never go to Alaska, father," said Edith, when her mother had finished reading the letter.

"Why?" asked Mr. Cameron.

"Because we should have to wait so long for letters from you," returned the little girl. "I don't see how people can get along without having mail *once* a day at least. The postman comes here *three* times a day, you know. Uncle wrote his letter on July 4, and this is August 2."

"There are many persons who do not see a postman every day," said grandpa. "People are sometimes on the ocean for several weeks at a time. Of course they receive no mail while they are at sea."

"Perhaps," continued grandpa, taking Edith upon his lap, "I can tell you a story about the delivery of mail."

"Oh, please do!" said Edith.

"The custom of sending messages from person to person has been followed for thousands of years," began grandpa. "We read in the Bible of a letter which King David wrote from the city of Jerusalem to one of his generals named Joab. This letter was placed in the hands of a messenger who carried it to the general. There were no trains in those days and so all letters were delivered by men on foot, men on horseback, or by carrier pigeons."



"By carrier pigeons!" cried Edith. "How could a pigeon carry a message?"

"The birds were trained when quite young," replied her grandpa. "They were taken a short distance from home and then set free. The pigeons would, of course, fly home. The next time they were taken a greater distance. This training was repeated many times, the distance always being increased. A man going on a long journey would sometimes take several pigeons with him. When he wished to send a message home it was fastened to one of the birds, which was then set free. Full-grown carrier or homing pigeons, as they are sometimes called, can fly more rapidly than a train runs.



*Photo by Brown Bros.*

### A Carrier Pigeon

Notice how the message is tied to the pigeon's leg.

Such pigeons are occasionally used now, not because we need them, but because their use is very interesting.

"In those early days letters and even books were often written upon tablets of clay. The skins of animals, the bark of certain trees, and the thin tissues from the stalks of the papyrus plant, which grows in Egypt, were found much more convenient, however.

"In time the carrying of messages, which was established for the use of kings and others of high rank,

came to be employed by the common people. You have often heard the expression 'post haste.' Years ago people in England used to write across the face of their letters, 'haste, haste, post haste.'

"During early colonial days the colonists were very anxious to hear from home, and home in most cases meant England. When a ship from the mother country landed on our shores there were always people waiting to see if it brought them news from the loved ones left behind. The captain of the vessel took to the nearest coffee-house the letters not called for at the wharf and there they were obtained by their owners.

"As the country was settled men were engaged to carry the mail between the different towns and cities. Usually the postmen did not start out until they had letters enough to pay the expenses of the trip. They would carry packages and even lead horses from town to town in order to earn a little money. It is said that one Pennsylvania postman knit mittens and stockings as he jogged along.

"The first regular mail service between Boston and New York was established on January 1, 1673. The round trip in the winter required about a month.

"As late as 1704 there was no regular post office west of Philadelphia. On July 26, 1775, the colonists appointed Benjamin Franklin as Postmaster General, paying him a salary of \$1,000 a year.

"Here," continued grandpa, "is a letter that I received yesterday from Lynn, only a few miles away; you see that there is a two-cent stamp upon it. Please bring me Uncle Charles's letter." Edith ran to the table and returned with the letter. "You see," said

grandpa, "that this letter also bears a two-cent stamp, although it was carried several thousand miles. Did you ever see letters that came from a foreign country?"

"Oh, yes," answered Edith; "in some cases they have five-cent stamps on them."

"In 1792," continued grandpa, "the Congress of the United States fixed the rate of postage in this country. In some cases it cost ten cents to send a letter only a short distance. The cost depended upon how thickly settled the country was, as well as upon the nature of the roads.

"Although people paid for having their letters delivered in the days of our early history, there were no postage stamps in use. The charges were generally paid by the person who received the letter. The amount due was stamped on the outside.

"In August, 1834, James Chalmers, at Dundee, Scotland, made the first adhesive stamps."

"What are adhesive stamps?" asked Edith.

"They are stamps that are made to adhere or stick to the envelopes by moistening them," her grandpa replied.

"In 1847 the United States government commenced issuing postage stamps. Before this time some of the postmasters were allowed to make stamps, but this is not permitted to-day. At first only five- and ten-cent stamps were made by the government. The five-cent stamps bore the head of Franklin, while that of Washington appeared upon the ten-cent stamps. Previous to 1863 people were obliged to call at the post offices for their mail as there was no house-to-house delivery. In 1885 special delivery stamps were issued. These cost ten

cents each; but when such a stamp is placed upon a letter, it is delivered by a special messenger.

"Another interesting thing about letters written many years ago is, that they were not placed in envelopes."

"Why not?" asked Edith, in great surprise.

"Because," continued grandpa, "there were no envelopes. When a letter was finished it was folded into the form of an envelope and fastened by means of sealing wax."

Lifting Edith from his lap, grandpa went into his room and returned in a moment, carrying a little box. Opening it he took from it two faded letters.

Selecting one of them he said: "This letter was written in Baton Rouge, Louisiana, on October 1, 1847. That was many years ago. As you see, the postage was ten cents. This second letter was written on June 20, 1853. It, you see, bears two three-cent stamps. Both letters were written to my father who lived in Geneva, New York State.

"To-day a letter can be sent from Boston to San Francisco in five days, but before the year 1860 twenty-one days were required to send one from Independence, Iowa, to California, a distance of nineteen hundred fifty miles, for there were no railroads in the far West. Realizing the great need of a better mail service, some wealthy men established the *Pony Express*.

"Two hundred stations were built between these points, and at these five hundred swift, strong ponies were kept. Eighty riders were employed to carry the mail. Each rider rode from seventy to one hundred

miles with no stops except to change ponies. At noon on April 3, 1860, the start was made from each end of the line. The first trip was made in ten days. Later it took eight or nine days. President Lincoln's first inaugural address was carried in seven days and seventeen



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### The Post Office at Washington, D. C.

hours. For some time the postage was \$5 for a half ounce, but later it was reduced to \$1.

"Many were the dangers which these brave mail carriers endured, for there were in those days unfriendly Indians and outlaws. The rider made no stop to eat or sleep until the end of his journey was reached. The longest ride was made by William Cody, later called 'Buffalo Bill,' who was then but fifteen years of age.



The boy rode steadily for nearly thirty-six hours, covering a distance of three hundred eighty miles. During all of that long ride he stopped for only one meal.

"The Pony Express was kept up for less than two years, for on October 22, 1861, a telegraph line connecting the East with the West was finished, making it easy to send messages across the continent by wire.



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### Rural Delivery of Mail

"The postal service has grown and improved wonderfully in our country. At first the mail was carried by men on horseback, then by coaches, and now by trains. Parts of the country into which railroads are not built have their mail delivered in the old way. Formerly people went to the nearest post office for their mail;



now in all cities the mail is delivered by postmen, just as the letter from Uncle Charles was delivered to-day.

"In many parts of the country there is a rural free delivery. In some sections each family has its post box



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### **A Fast Mail-Carrying Passenger Train**

**In the foreground is the Lincoln Highway.**

beside the road in front of the house. Upon each box is the name of the family to whom it belongs. Frequently the boxes of several families are placed in a group at a central point. This saves time for the postman who usually makes his trips by automobile.

"To-day some trains are given up entirely to carrying

mail, and many passenger trains that cross the continent carry tons of mail. Not only is the mail carried on trains, but it can be posted on them as well. It is also sorted on the mail cars, and sacks of mail are thrown off and others taken on while the train is going at full speed."

"I don't see how mail can be put on a train when it is in motion," said Edith.

"Beside the track, at the places where mail is to be exchanged, there are upright posts of wood or iron," said grandpa. "Attached to each upright there are two cross arms as far apart as a mail sack is long. By means of hooks a sack is suspended between these arms.

"Beside the door of each mail car there is a sort of arm, or hook, of iron. Just before the mail car reaches the spot where a mail bag is hanging, the postmaster within the car raises this arm which, as the train rushes by, pulls the sack from the hooks and holds it. It is then taken by the postmaster, opened, and its contents sorted. At the same time that the sack is taken on board another is thrown from the door of the car. The first of these traveling post offices was run between Chicago and Clinton, Iowa, about 1864.

"In 1790 there were but seventy post offices in the United States. In 1900 the number had increased to 76,688, while on June 30, 1923, there were only about 50,000. The decrease is due to the large number of rural free-delivery routes that have been established.

"Autotrucks are now extensively used in handling the mail in cities. They carry great loads between the railroad stations and the post offices. You have already learned how airplanes are used in the postal service.

"This wonderful postal system makes it possible for us to send letters to any part of the civilized world. If properly addressed and stamped, they are almost certain to reach their destination safely and promptly, just as Uncle Charles's letter came all the way from the Arctic Circle to our door for only two cents."

Would you like to live in northern Alaska in the winter?

What interesting experience could one have there in the summer?

In what strange way is the mail sometimes carried?

How were King David's letters delivered?

Tell how carrier pigeons are trained.

Describe the mail service in our country during colonial days.

Name a foreign country.

Of what use is a special delivery stamp?

What was the Pony Express?

Why is mail now delivered more promptly than it used to be?

Why should great care be used in addressing letters?

What is the latest improvement in postal service?

## PARCEL POST

"BESSIE," said her mother, "please answer the door-bell." Bessie hurried to the door and soon her mother heard shouts of delight. A moment later Uncle Fred, Cousin Jane, and Bessie appeared.

"I am so glad to see you," said Mrs. Williams. "But how did you happen to surprise us in this manner?"

"An unexpected business trip brought me," replied Uncle Fred, "so we let Jane come also."

"You came at just the right time!" cried Bessie. "On Friday we are all going to Crystal Lake for the day and you can go with us."

"I am sorry that we cannot go," returned her uncle. "It is necessary for me to go back to the city tomorrow."

"Must Jane go with you?" inquired Mrs. Williams.

"She expected to go back with me," replied Uncle Fred, "and so she is not prepared for a long visit."

"Have the clothes that she will need sent by express," said Mrs. Williams.

"We can do better than that," said Uncle Fred. "I will post a letter to Jane's mother this afternoon asking her to send by parcel post such things as will be needed. That would not have been possible before 1913."

"Why not?" inquired Bessie, in surprise.

"Before that year," replied her uncle, "all packages weighing more than four pounds had to be sent by express. The charge was so high that it did not pay

to send certain things and packages were delivered in the cities only.

"In 1912 Congress passed a law establishing the parcel post. Such a system had been in use in various European countries for a number of years. For parcel post purposes the United States is divided into eight



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### Parcel Post Wagons Deliver Packages to All Parts of the City

districts called *zones*. The cost of shipping a parcel depends upon its weight and the distance it is to be shipped."

"Who handles the business?" asked Jane.

"The work is done by the Post Office Department," answered her father. "Many kinds of things may be





*Photo by Brown Bros.*

**This Picture Shows One of the Latest Telegraph Machines**



sent. The farmer may ship small packages of vegetables, fruits, berries, eggs, or other produce. Manufacturers and merchants may ship various kinds of goods. The packages are delivered in the country as well as in the cities."

"How can the postman carry the things?" asked Bessie.

"They are delivered by automobile or some other vehicle," answered her uncle. "No very heavy packages are sent by parcel post. Articles weighing not more than fifty pounds may be sent anywhere in the United States. Packages weighing from fifty-one to seventy pounds may be shipped shorter distances.

"The use of this system benefits many people. Materials may be sent directly from the producer to the consumer, thus saving the profit which the dealer is entitled to make. The rates are low and for a small extra cost packages may be insured or the government will collect pay and return it to the sender."

"How much will it cost to have my things sent?" asked Jane.

"Let me see," replied her father. "The city is eighty miles from here. That means that it is in the second zone. If the package does not weigh more than twenty-five pounds the cost will be only twenty-nine cents. It is a splendid system and is but one of the many ways in which our government helps the people."

What made it possible for Jane to make a longer visit than she had expected to make?

Upon what does the cost of sending a package by parcel post depend?

Who operates the system?

How heavy a package may be shipped?

How does parcel post benefit people?

## WONDERFUL WIRES

ONE morning a gentleman living in New York City wished to communicate with me. Not wanting to wait for a letter to be delivered, he stepped into a telegraph office and wrote a message upon a sheet of yellow paper. This he handed to the man in charge, who seated himself at a table upon which there were some small instruments noisily clicking. Rapidly working the key of one of these instruments, the operator gave the message to the wires and instantly it was flashed on its way. This was at half-past ten o'clock, and at eleven o'clock a messenger boy handed me the dispatch at my home, about three thousand miles from its starting point.

Many years ago the quickest way of delivering a message between these two points was by a special carrier on horseback. The trip would have been long, full of hardships and dangers, and costly. To-day telegraph lines connect all of our cities and towns, and they extend over lofty mountains and across dreary deserts.

The wonderful invention which makes possible the sending of messages over these wires was not the work of a single individual. Many men, both in Europe and America, worked at the problem, but the credit is chiefly due to Professor Samuel Morse. Professor Morse was the son of the Rev. Jedidiah Morse, who wrote the first geography ever published in America. After graduating from Yale College young Morse

went to England and studied painting for several years. You remember that Robert Fulton, another great American inventor, also studied painting in Europe.

Mr. Morse was forty-one years old when he gave up his art work and began to devote his life to the study of electricity. In 1837 he exhibited his telegraphic apparatus before the President of the United States and his cabinet, and in 1840 he obtained a patent on it. Inventing and patenting the apparatus was only a part of the work, however. It takes money to put a great invention into use, and Mr. Morse was poor. He asked the government to aid him in carrying out his work, but for some time no help was given.

On the morning of the fourth day of March, 1843, Mr. Morse was told that Congress had appropriated the sum of \$30,000 to enable him to establish a telegraph line between Baltimore and Washington, a distance of forty miles. The news seemed almost too good to be true. It came after eleven years of patient toil, many disappointments, and hardships. The first message sent over the line was dictated by a Miss Ellsworth, who had brought the joyful news to Professor Morse. It was as follows: "What hath God wrought!" This was on May 24, 1844.

Soon after the opening of the line, the National Democratic Convention, which was in session in Baltimore, nominated James K. Polk for President and Silas Wright for Vice-President. Mr. Vail, the assistant of Mr. Morse, at once telegraphed the news of the nominations to his superior officer in Washington. Within a very short time the convention received a message



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**A Part of the Parcel Post Distributing Room of a Large Post Office**  
Notice in the background the belt conveyors for sending the bags of mail to the cars.

from Mr. Wright declining the nomination. The members thought that a trick was being played upon them and sent a committee to Washington to talk to Mr. Wright. When the committee reported, people knew that the wonderful wires had told the truth.

Through the members of this convention the news of the success of the telegraph was carried to all parts of the country. Soon other lines were built not only in our own country but in Europe as well. Other men came forward with similar inventions, and Professor Morse had many trials in contending for his rights, but he was finally successful. Honors were conferred upon him by many countries, and in 1858 representatives from several European nations, meeting in Paris, sent him a present of about \$80,000 as a token of their regard.

Before operators can send or receive messages, they must understand the alphabet used in telegraphy. This alphabet was invented by Mr. Morse. It consists of dots, dashes, and spaces. The letters used most frequently have the most simple symbols. The letter "e" is represented by a dot, and "t" by a dash. New York is written in this way:—

N	e	w	Y	o	r	k
..	.	---	..	..	..	---

As the instrument produces the sounds which correspond to these dots and dashes, the operators write the messages which are being sent.

In constructing a telegraph line a large number of poles is needed. These are obtained by cutting trees in the forest, trimming off the limbs, and peeling off

the bark. The lines that follow the railroads across the open country have about thirty-five poles to the mile. Near the tops of the poles cross arms are fastened. Wooden pins are set into the upper edge of each cross arm and glass caps are screwed to the wooden pins. As the wires are strung from pole to pole they are fastened to the glass caps, or *insulators* as they are called. The insulators will not conduct or carry an electric current, and they therefore prevent it from leaving the wire at each pole.

The telegraph is of the greatest importance. All kinds of messages are sent over the wires. Much of the news printed in the papers comes to the newspaper offices by means of the telegraph. Merchants and speculators use the wires constantly so that they may be posted on the markets. Trains could not be run as they are to-day without the use of the telegraph. By means of the wonderful wires, farmers, fruitgrowers, sailors, and all who are interested may know thirty-six hours in advance what kind of weather to expect. Within an hour after the weather bureau officials feel certain that a severe storm is approaching, every sailing-master on our coast, as well as along our lake shores, has been warned. Because of this, many lives and much property are saved each year. During a single cold wave millions of dollars worth of fruit may be saved by sending out telephonic and telegraphic warnings of frost.

At eight o'clock, both morning and evening, by Washington time, weather conditions are observed at a large number of stations in various parts of our country and telegraphed to the great central stations.



While these reports are being sent the wires cannot be used for any other purpose.

When next you look at a telegraph line extending along a city street or across the country, you may perhaps wonder what messages the wonderful wires are carrying. Swiftly, silently, and constantly messages are flashing over them from all parts of the country. We can send business information or personal greetings to our friends in the next town or on the opposite coast. Surely no work of giant, fairy, or brownie could be more wonderful than this

Let us not forget that the men who made this possible have done as much for the world and are entitled to as much praise as our great soldiers. One does not need to be a soldier, nor to hold high office, nor to be wealthy, in order to be great.

Who was the inventor of the telegraph?

How long has the telegraph been in use?

What is meant by *Congress*?

Read aloud a sentence that shows that the inventor of the telegraph did not easily give up.

What is the meaning of *contending*?

Why does not the electric current flow from the wires down the poles?

Tell of several ways in which the telegraph is of use to us.

## THE TELEPHONE

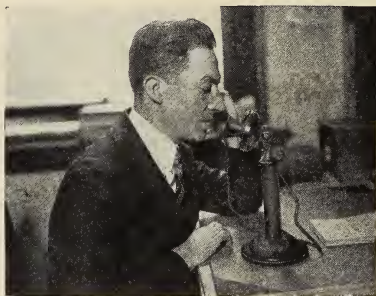
IF fifty years ago people had been told that it would some day be possible to sit in one's home or office and converse with a person miles away, the story would not have been believed.

To-day, carrying on a conversation by means of the telephone is so common that we hardly give it a thought. You remember that in telegraphing there are sounds which stand for letters. It seems wonderful to send messages in that way,

but it seems still more wonderful to be able to hear and recognize the voice of a friend, although that friend may be hundreds of miles away.

The word "telephone" was made by using two Greek words, one of which means *far* and the other *sound*. Telephoning, then, means sending the sound of the human voice to distant points.

Mr. Alexander Graham Bell was the first man to send speech over a wire. He applied for a patent on his invention on the fourteenth day of February, 1876.



Talking from New York

Another inventor, Elisha Gray, applied for a patent on a similar invention on the very same day.

In August, 1876, Mr. Bell telephoned a distance of five miles. On the evening of October 9, of the same year, he telephoned from Boston to Salem, Massachusetts, about fifteen miles.

At first telephone messages were sent over telegraph wires, but on the fourth day of April, 1877, the first real telephone line was built. This extended from Bos-

ton to the near-by town of Somerville.

The telephone was exhibited at the Centennial Exposition in Philadelphia in 1876, and people from all parts of our country learned of the wonderful invention. It was rapidly introduced; at first for the use of business men, and later in



*Photo by Ewing Galloway*

**to San Francisco over the Telephone**

dwellings and in the country, as well as in the cities.

For some time no long telephone lines were built. On May 7, 1877, the following circular letter was sent out by the telephone company:—

“The proprietors of the telephone, the invention of Alexander Graham Bell, for which patents have been issued by the United States and Great Britain, are now prepared to furnish telephones for the transmission of articulate speech through instruments not more than twenty miles apart. Conversation can easily be carried

on after slight practice and with the occasional repetition of a word or sentence.

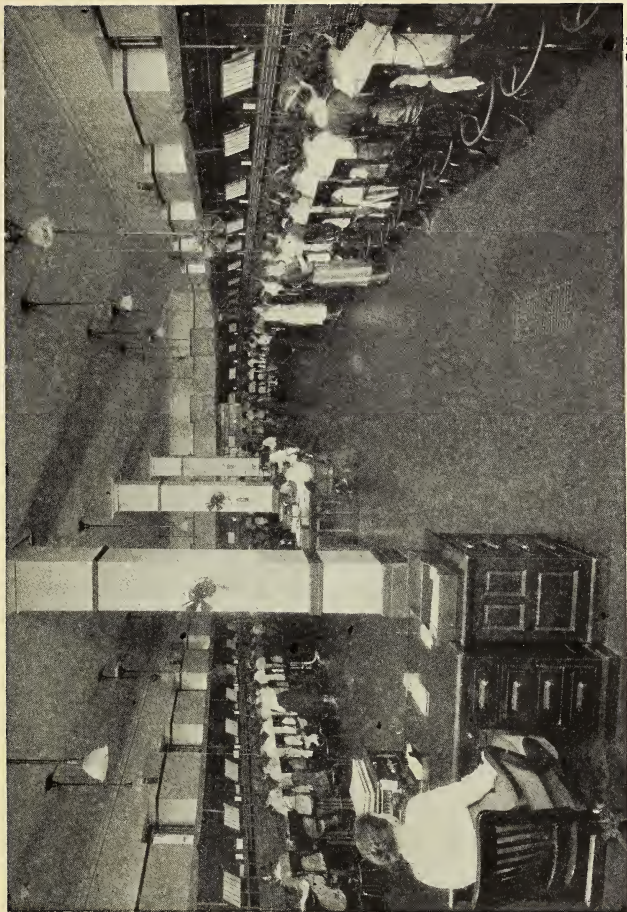
"The telephone should be set in a quiet place, where there is no noise which would interrupt ordinary conversation.

"The terms for leasing the telephone for social purposes, connecting a dwelling house with any other building, will be \$20 a year; for business purposes, \$40 a year."

It was soon discovered that longer lines could be operated. In 1884 New York and Boston were connected, in February, 1903, Chicago and Boston were united by telephone, and in 1915 it became possible to telephone from San Francisco or Los Angeles to New York.

There are now in our country many million miles of telephone wires in use, and there are an enormous number of subscribers. Lines have been built in all parts of our country, and they are found in nearly all parts of the world.

If you could follow the telephone wire from your home you would find that it ends in a building of the telephone company. Here all of the wires running to the homes and offices in the town or city terminate. In this building there are a number of *operators*. These are nearly always girls. Each of these operators is known as *Central*. That is, each one is central for a certain set of numbers. The operators sit before a switchboard on which there are many numbers, corresponding to the numbers of the telephones in use. When you step to your telephone and lift the receiver from its hook, a tiny, round electric light is displayed in



*Photo by Ewing Galloway*

## A Telephone Exchange

front of one of the girls in the telephone office. When the operator sees this signal, she pushes a little brass plug connected with a wire into an opening called a *spring jack*. Next she connects a receiver, which is strapped to her head, with a transmitter in front of her, and you hear her say, "Number, please?" When you have told her she finds whether that particular number is in use. If it is, she says, "The line is busy." If the line is not in use, the bell rings in the home or office of the person wanted, and we soon hear some one say, "Hello."

Some lines are *party lines*, that is, several persons use the same line. Other lines are individual lines. Of course the individual lines are much the more desirable of the two, for on these conversation cannot be interrupted.

Think of the many ways in which we use this wonderful invention, the telephone. We order groceries, meat, fuel and other things by means of it. We "call up" our friends just to exchange friendly greetings, and business men transact a great deal of business over the telephone. We are now so accustomed to the use of telephones that it would be difficult to get along without them.

What is the meaning of the word *telephone*?

What is the difference between the telegraph and the telephone?

Of what use to an inventor is a patent?

How were the first telephone messages sent?

How does *central* know when you ask for a number?

How has the telephone been improved?

Tell of a number of different uses of the telephone.

What is a *party line*?



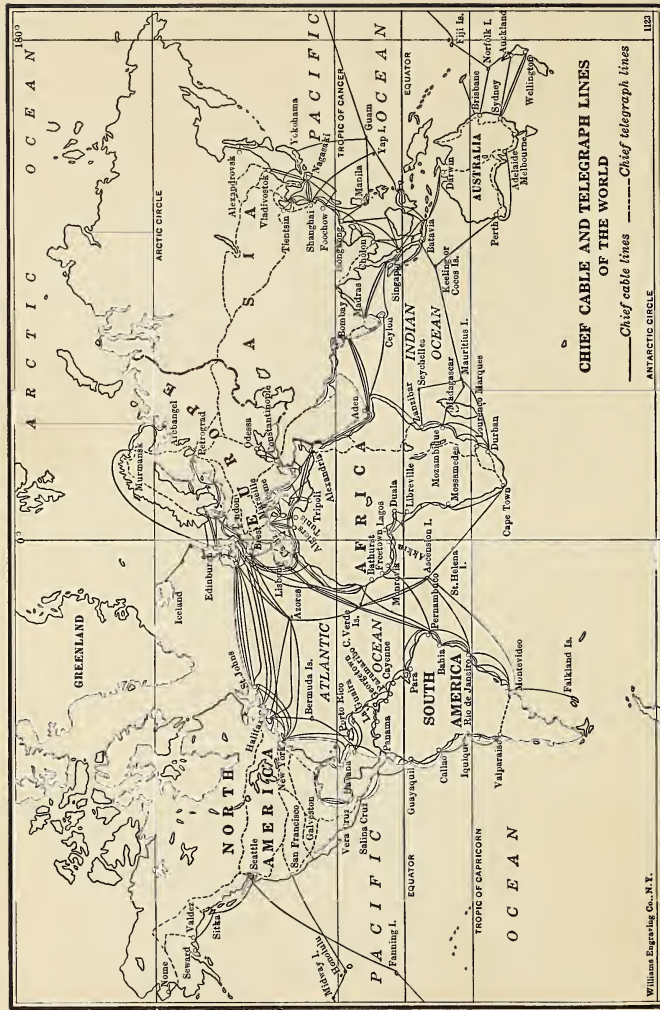
## MESSAGES UNDER THE OCEAN

IF you were in England, Japan, Australia, or in almost any other part of the world and wanted to send a message to your home, you would not have to write a letter. Instead, you might go to a telegraph office and send your message by wire. If the station from which your dispatch was sent were not on the coast, the message would flash to some station so situated, and from there it would travel to America over wires laid on the bottom of the ocean.

Look at a map of the world and see what a long, long distance it is from New York, Boston, or from your home to Manila in the Philippine Islands; yet you could send a message to some friend in Manila which might reach him in a few hours. Is not this wonderful?

It is not very long since ocean cables first came into use. In 1839 a gentleman in far-off India thought that messages might be sent under water. He laid a copper wire wound with cotton thread, and covered with pitch and tar, under the Hooghly River. By means of this wire, signals were sent across the stream.

Three years later Mr. Morse, of whom you have been reading, laid a wire between Castle Garden and Governor's Island, New York. It was found that signals could be sent through this also, but it was soon torn up by the anchors of ships. In 1849 a cable was laid between New York and Jersey City. Mr. Morse kept on experimenting and soon came to the conclu-



sion that it would be possible to send messages across the sea.

France and England are separated by the narrow English Channel. Between Calais and Dover it is only about twenty-five miles wide. Between these two points a cable was laid in 1847. It worked successfully for one day and then failed. The next year, however, the cable was operated. This was the first successful ocean cable ever laid.

Finally it was determined to connect Europe and North America by means of the ocean telegraph. Mr. Morse did not have the money with which to carry out this great undertaking, and the success of the enterprise was in large measure due to Cyrus W. Field. Mr. Field was at that time a young merchant in New York City. He had great faith in Mr. Morse and the cable, and was not discouraged by the first failures. A cable was constructed, and in the year 1857 the work of laying it commenced. It is a long, long distance across the Atlantic Ocean, and the water is very deep. It was decided to connect Ireland and Newfoundland. Look at the map and see if you can tell why.

The cable was placed on board a vessel and reeled out as the ship sailed forward. How anxiously all those on board watched the wire as it disappeared beneath the waters of the ocean! When about three hundred thirty-eight miles had been paid out, the cable broke.

What was to be done? Far below on the ocean floor lay the wire, and there was no means of getting it up. The people who believed in the success of the undertaking were very much disappointed, but they did not give up. Another cable was made, and the next year,

after several mishaps, it was laid. On August 13, 1858, this message was sent over the wire: "Europe and America are united by telegraph. Glory to God in the highest; on earth peace and good will to men." It took thirty-five minutes to send the message. To-day cable messages can be sent very rapidly.

The people of England and America were delighted and great enthusiasm was shown. Just four hundred messages had been sent when, to the surprise and disappointment of all, on the first of September the cable refused to work.

For a long time it seemed as though nothing could be done. Many lost faith in the cable, and the Civil War made it difficult to get people interested in the work. However, there were a few men who would not give up. Another cable was made, and in 1865 the *Great Eastern* sailed from Valencia, Ireland, with it. After some mishaps the cable was laid and operated. Its success gave the public faith in the work, and other cables were laid between Europe and America. There are now many cables connecting these two continents. As the chart shows you, the various continents and many islands are now connected by cable.

The map shows that the Pacific is very much wider than the Atlantic Ocean. It has not been very many years since the first cable was laid across this grand expanse of water. On October 31, 1902, a cable between British Columbia, Canada, and Australia was completed. Note the islands connected. There is now a cable connecting San Francisco and Manila. Its length is more than seven thousand miles. Name the islands which it connects.

Cables are made of fine copper wires twisted together. These wires are covered with gutta percha. Next comes a layer of jute or hemp. Outside of this are iron wires twisted spirally, each wire being covered with strands of hemp.

It is very expensive to lay an ocean cable, and it costs a great deal to keep one in repair. When a cable is to be laid coils of wire containing several hundred miles each are taken on board a ship. As the vessel goes forward the cable is reeled out from the stern at the rate of four to eight miles per hour.

After the cable has been safely laid the part in shallow water may be broken by the anchors of ships or floating icebergs. A break is located by sending a message from each end of the line and estimating the distance which each travels. Knowing the total length of the cable, the captain of the repair ship can go almost exactly to the spot where the break occurred. Hooks are lowered to the bottom of the ocean, and by means of these the ends of the cable are drawn on board and the break mended.

A cable lasts from thirty to forty years unless it meets with a mishap. The weight of deepwater cables is from one to one and one-half tons per mile, while the part near shore sometimes weighs fifteen tons to the mile.

There are now many cables in the oceans of the world. Over these millions of messages are sent each year. In early days the cost of sending a message across the Atlantic was five dollars per word, while to-day it is about twenty-five cents.

Business houses have what is called a *code*. By this

arrangement a single word may stand for a large number of words. This makes it possible to cable considerable information at slight cost and in a very short time.

You have only to pick up the daily paper to see that we have news of events that took place in all parts of the world but a few hours before the paper was printed. Before the laying of the first Atlantic cable, news from England was brought to this country by ship and was more than a week old when it reached America. You see how important the cable is to us even though we may never send a cablegram.

Where were cables first used?

What were the advantages in laying a cable across the English Channel?

Between what points was the first Atlantic cable laid?

Why was this route chosen?

What is the meaning of *enthusiasm*?

Of what are cables made?

How may they be broken?

Why is the cable used more to-day than it was at first?



## WIRELESS MESSAGES

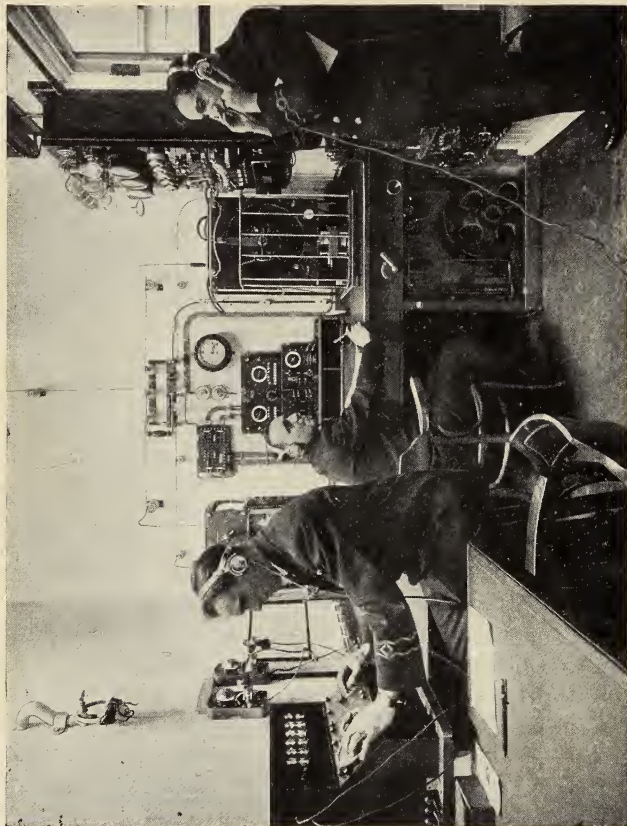
WONDERFUL as it is to have messages carried on wires, it is now possible to telegraph and telephone without their use. Wireless telegraph and telephone are used for pleasure as well as for business. Much of the credit for the success of this work is due to the patient study of a young Italian scientist named Marconi.

The great ships of the world are now equipped with wireless apparatus. In case of danger a call is immediately sent out. Usually it is heard by the operators on several other ships and generally it is heard on land as well. In some cases those who hear the messages are thousands of miles from those who send them.

In the early morning of October 12, 1922, the good ship *City of Honolulu* was speeding across the Pacific Ocean toward Los Angeles, California. At 5:30 o'clock in the morning fire was discovered. The captain immediately ordered the wireless operator to send out a call for help. The call was answered by several ships, but the nearest of those was far away.

The sailors fought the fire like heroes but they could not extinguish it, and finally the passengers and crew got into the lifeboats. In these water and provisions were placed. The officers and the wireless operator were the last to leave the burning ship.

After several hours had been spent in the lifeboats the unfortunate people were rescued by a great freight-



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Wireless Room on Board the Steamer *Majestic*

ing vessel. A little later a ship having better accommodations appeared, and the people were transferred to it.

When fire was discovered on the *City of Honolulu* the vessel was 774 miles from land. In spite of this every person on board was saved. There have been many cases where wireless telegraph has saved the lives of people at sea. This means of communication is used on land as well as sea and for many purposes.

By means of the wireless telephone we hear actual voices of people or the playing of musical instruments. You know that radio outfits are in many homes and probably you have enjoyed "listening in."

In this and in other countries there are stations known as broadcasting stations. At these stations instruments called *transmitters* create waves which travel through space. They travel with wonderful rapidity and pass through walls and forests and over land and water.

These waves are of different lengths. When a receiving instrument is *tuned*, that is, adjusted to the same wave length as that of the transmitter, the message can be heard. The receiver changes these mysterious waves back into the original sounds.

We may sit in our homes and listen to an orchestra, a singer, a sermon, or a lecture although the musicians or speakers are many miles away. General news, weather conditions, crop reports, and market reports are obtained in the same way. Newspapers print programs and in many cases radio programs are mailed to individuals. These programs show just what may be heard on given days and at given hours.

Storms in the temperate zone travel from west to east. The average rate of travel is well known. By means of the radio service people on the Pacific coast of America know the weather conditions existing far out at sea. This enables the Weather Bureau to forecast the weather more accurately than it otherwise could.

Why do ships carry wireless apparatus?

Tell how wireless saved the people on the *City of Honolulu*.

What are lifeboats?

What is a broadcasting station?

What does the transmitter do?

What is meant by *tuning* the receiver?

Tell of various ways in which radio is of use.



## DATE DUE SLIP

APR 3 RETURN



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CHAMBERLAIN JAMES FRANKLIN

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